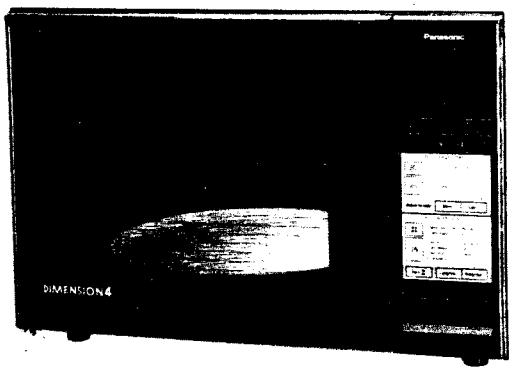
Service Manual

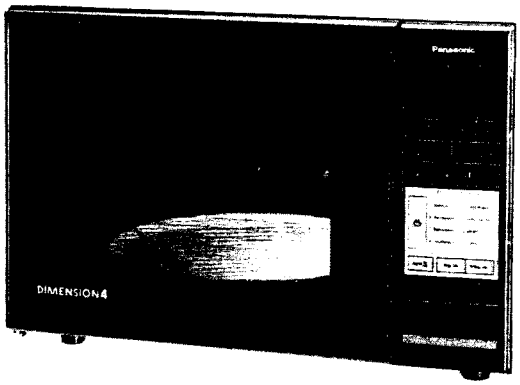
Microwave Oven

NE-992, NE-993
NE-972

For United Kingdom
For NAAFI



NE-992, NE-993



NE-972

Specifications

Power Source :	240 V AC Single Phase, 50 Hz
Power Requirement :	2.8 kW (11.5 A)·····Maximum Required Power (Microwave & Grill Heater) (Convection Heater & Grill Heater) 1.2 kW (5.6 A)·····Microwave 1.2 kW·····Convection Heater 1.5 kW·····Grill Heater
Output :	600 W·····Full Microwave Power
Oscillation Frequency :	2,450 MHz
Timer :	99 min. 99 sec./9 hr. 99 min.
Outside Dimensions :	558 mm (W) × 495 mm (D) × 386 mm (H)
Oven Cavity Dimensions :	355 mm (W) × 355 mm (D) × 241 mm (H)
Weight :	31.5 kg
Specifications subject to change without notice.	

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

WARNING

* This product should be serviced only by trained, qualified personnel. As for the oven lamp, it is replaceable by the users.
* This service manual covers products for following markets.
  When troubleshooting or replacing parts, please refer to the country identifications shown below for your applicable product specification.
  BPQ·····For United Kingdom
  PPQ·····For NAAFI

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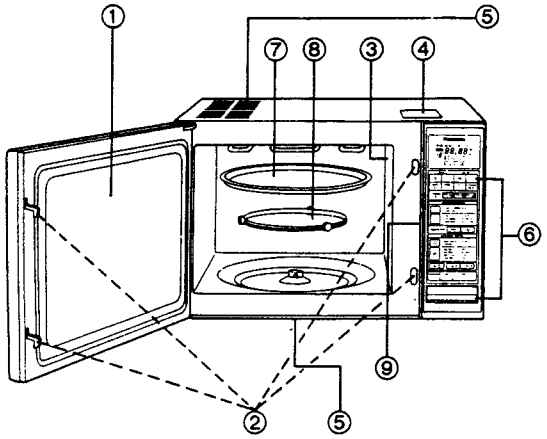
OUTLINE DIAGRAM & CONTROL PANEL (NE-992/NE-993)

Outline Diagram



① **Oven Window**

② **Door Safety Lock System**
Before any cooking function can begin, oven door must be securely shut.

③ **Oven Light**
Will turn on whenever the door is opened or during cooking.

④ **Oven Light Cover**
Allows easy access to replace the oven light.

⑤ **Oven Air Vents**
Never block air vents during cooking.

⑥ **Control Panel**
See below.

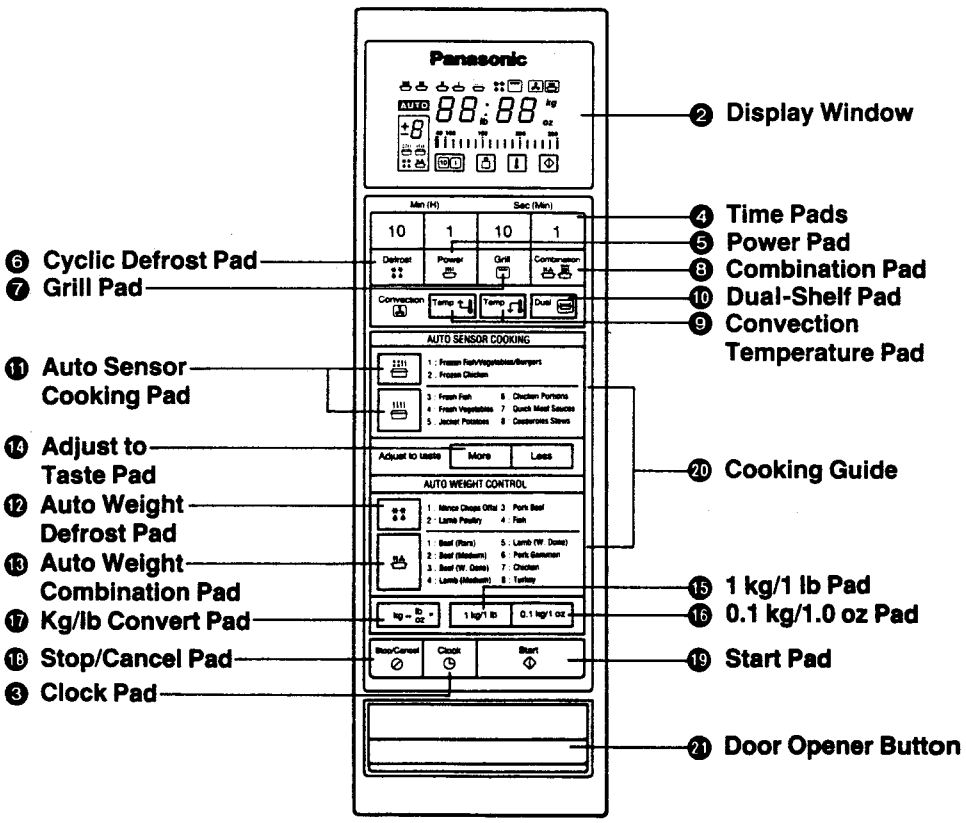
⑦ **Ceramic Tray**
Must be placed in the oven before cooking.

⑧ **Roller Ring**
Must be placed in the oven before cooking.

⑨ **Nameplate**

Control Panel

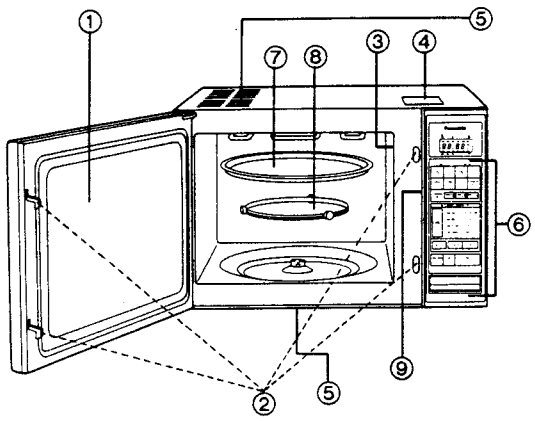
❶ Controls with Auto Count-Up Feature



❷ Display Window
❹ Time Pads
❺ Power Pad
❽ Combination Pad
❿ Dual-Shelf Pad
❾ Convection Temperature Pad
❻ Cyclic Defrost Pad
❼ Grill Pad
⓫ Auto Sensor Cooking Pad
⓮ Adjust to Taste Pad
⓬ Auto Weight Defrost Pad
⓭ Auto Weight Combination Pad
⓴ Cooking Guide
⓯ 1 kg/1 lb Pad
⓰ 0.1 kg/1.0 oz Pad
⓱ Kg/lb Convert Pad
⓲ Stop/Cancel Pad
❸ Clock Pad
⓳ Start Pad
㉑ Door Opener Button

OUTLINE DIAGRAM & CONTROL PANEL (NE-972)

Outline Diagram



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Control Panel

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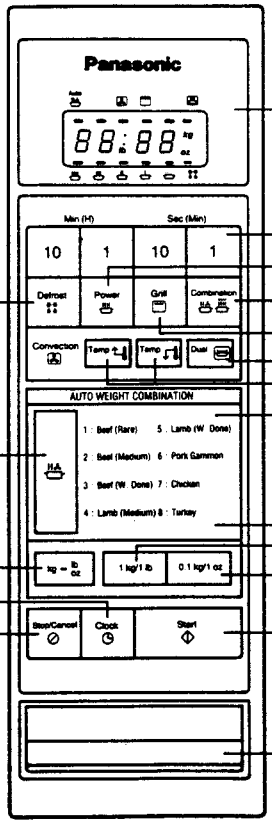


⑤ **Cyclic Defrost Pad**
⑩ **Auto Weight Combination Pad**
⑬ **Kg/lb Convert Pad**
❷ **Clock Pad**
⑭ **Stop/Cancel Pad**
⑯ **Display Window**
❸ **Time Pads**
❹ **Power Pad**
⑦ **Combination Pad**
❻ **Grill Pad**
❾ **Dual-Shelf Pad**
❽ **Convection Temperature Pad**
⑰ **Cooking Guide**
⓫ **1 kg/1 lb Pad**
⓬ **0.1 kg/1.0 oz Pad**
⑮ **Start Pad**
⑱ **Door Opener Button**

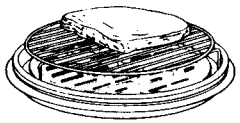
6

Refer to the "Operating Instructions" and "Cookbook" provided with your microwave oven for complete information.

	1st Step	2nd Step	3rd Step	4th Step	5th Step	6th Step
CLOCK SET	10 1 10 1	Clock				
AUTO SENSOR COOKING	or	(More Less)	Start			
AUTO WEIGHT DEFROST		(kg↔lb oz)	1 kg/1 lb 0.1 kg/1 oz	Start		
AUTO WEIGHT COMBINATION		(kg↔lb oz)	1 kg/1 lb 0.1 kg/1 oz	Start		
MICROWAVE COOKING	Power	10 1 10 1	Start			
CYCLIC DEFROST	Defrost	10 1 10 1	Start			
CONVECTION W/O PREHEAT	Temp or Temp	10 1 10 1	Start			
CONVECTION W/PREHEAT	Temp or Temp	Start	(pre-heating)	10 1 10 1	Start	
CONVECTION DUAL SHELVES	Dual	Temp or Temp	Start	(pre-heating)	10 1 10 1	Start
GRILL W/O PREHEAT	Grill	10 1 10 1	Start			
GRILL W/PREHEAT	Grill	Start	(pre-heating)	10 1 10 1	Start	
COMBINATION	Combination	10 1 10 1	Start			

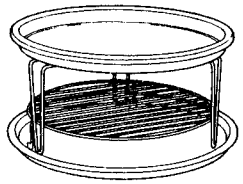
Accessories for each way of cooking (Example)

1



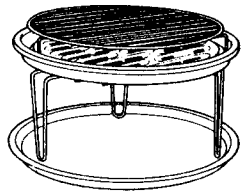
Convection or Convection Combination

2



Dual Shelf Convection

3



Grill or Grill Combination

ANE0420Z70BP
Printed in Japan

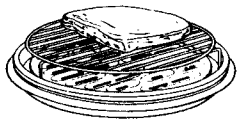
OPERATION GUIDE FOR NE-972

Refer to the "Operating Instructions" and "Cookbook" provided with your microwave oven for complete information.

	1st Step	2nd Step	3rd Step	4th Step	5th Step	6th Step
CLOCK SET	10 1 10 1	Clock				
AUTO WEIGHT COMBINATION		kg ↔ lb oz	1 kg/1 lb 0.1 kg/1 oz	Start		
MICROWAVE COOKING	Power	10 1 10 1	Start			
CYCLIC DEFROST	Defrost	10 1 10 1	Start			
CONVECTION W/O PREHEAT	Temp or Temp	10 1 10 1	Start			
CONVECTION W/PREHEAT	Temp or Temp	Start	(pre-heating)	10 1 10 1	Start	
CONVECTION W/DUAL SHELF	Dual	Temp or Temp	Start	(pre-heating)	10 1 10 1	Start
GRILL W/O PREHEAT	Grill	10 1 10 1	Start			
GRILL W/PREHEAT	Grill	Start	(pre-heating)	10 1 10 1	Start	
COMBINATION	Combination	10 1 10 1	Start			

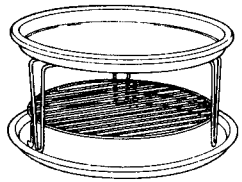
Accessories for each way of cooking (Example)

1



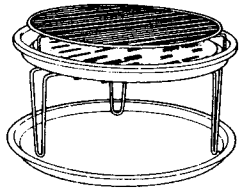
Convection or Convection Combination

2



Dual Shelf Convection

3



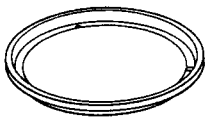
Grill or Grill Combination

ANE0420R70BP
Printed in Japan

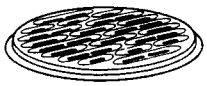
ACCESSORIES

Accessories

Accessories and Use



Drip Tray-Grill Pan
(ANE0603Z70BP)

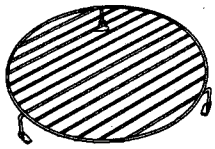


Splash Guard
(ANE0648Z70BP)

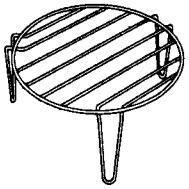
Splash Guard:
Use with the Drip pan. Splash Guard helps prevent splashing.

Ceramic Tray
(ANE0601Z70BP)

Ceramic Tray:
Oven should not be operated without the Ceramic Tray.

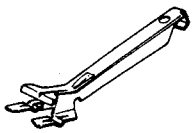


Low-Rack
(ANE0602Z70BP)



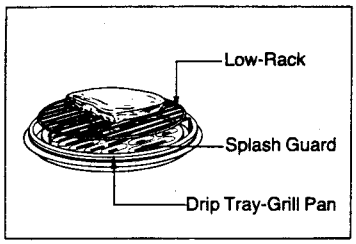
High-Rack
(ANE0641Z70BP)

Baking Tray
(ANE0709Z70BP)

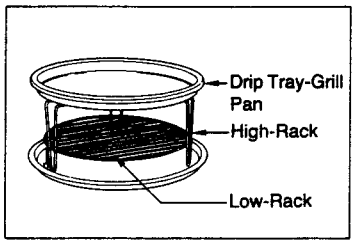


Handle
(ANE0604-F20)

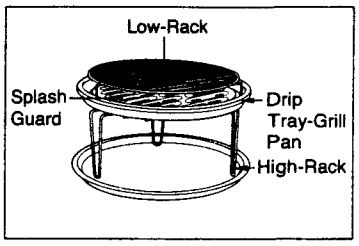
Followings are the recommendable usages:



CONVECTION/
CONVECTION COMBINATION

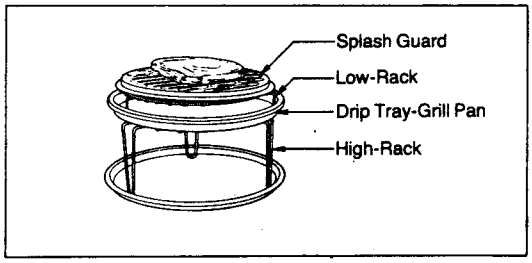


DUAL-SHELF COOKING

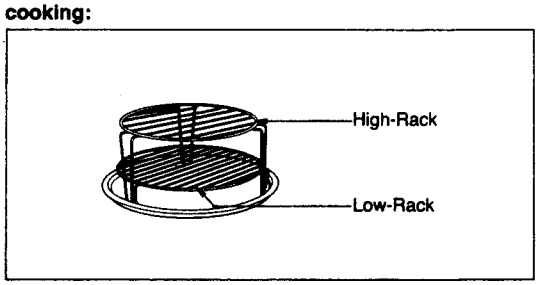


GRILL/GRILL COMBINATION

Do not use the following accessory combination in any case:



Do not use the following except during convection cooking:

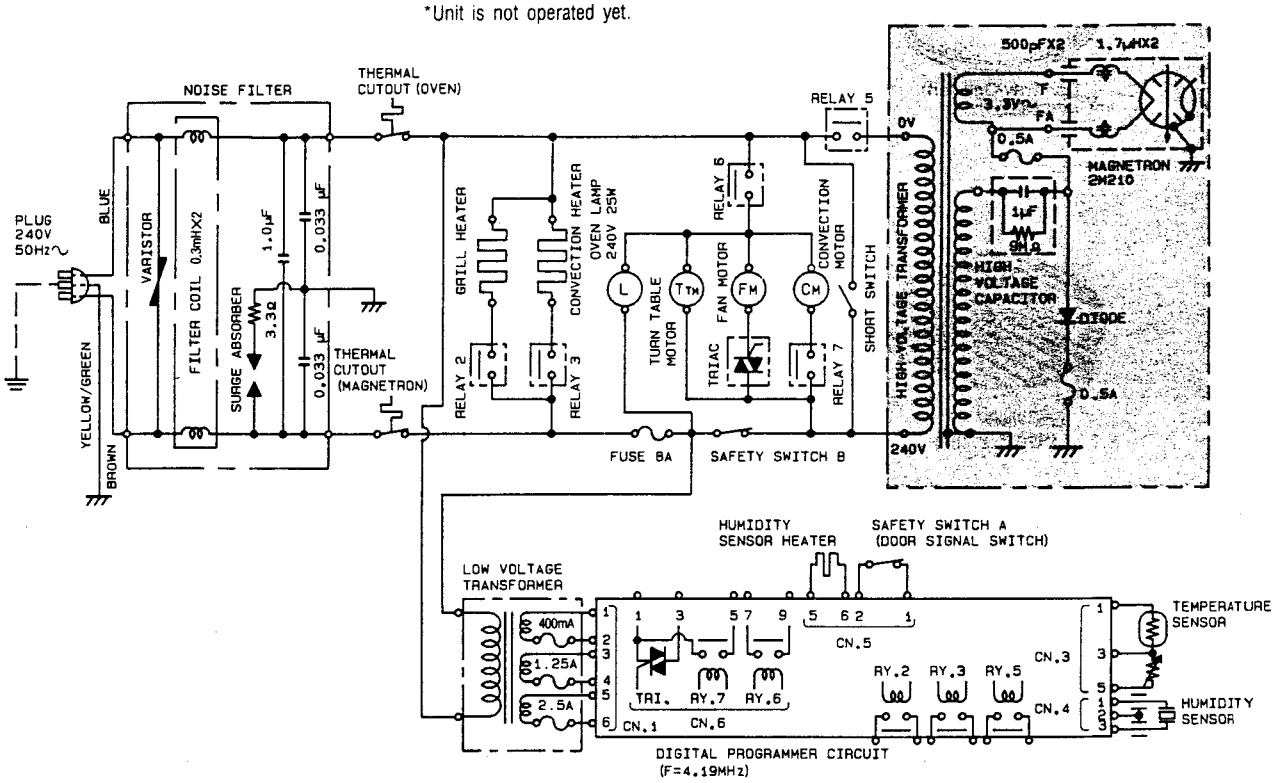


Further instruction will be given in the instruction section of applicable cookbook.

SCHEMATIC DIAGRAM (NE-992, NE-993 BPQ/PPQ)

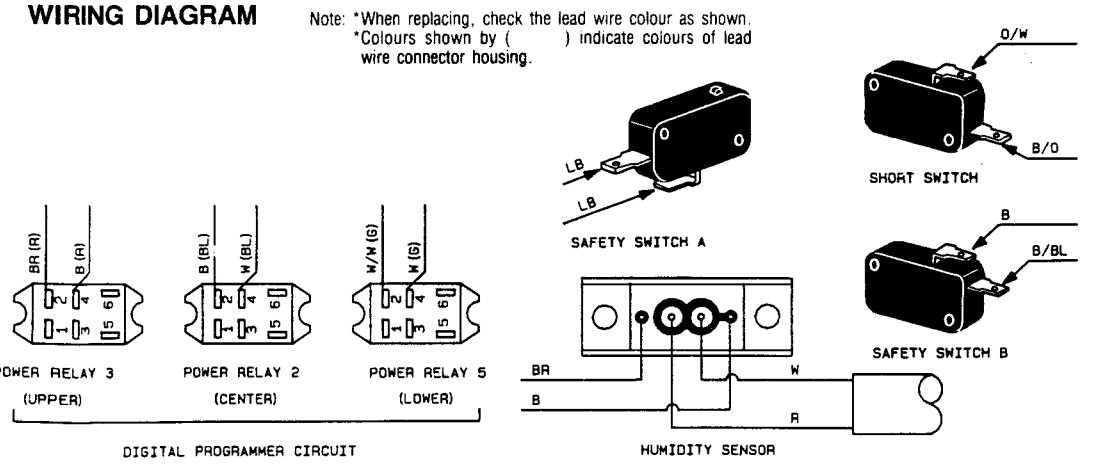
SCHEMATIC DIAGRAM

Note: *Door is closed.
*Unit is not operated yet.



WIRING DIAGRAM

Note: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.



SYMBOL	COLOUR
O	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
G	GREEN
R	RED
LB	LIGHT BLUE
B	BLACK

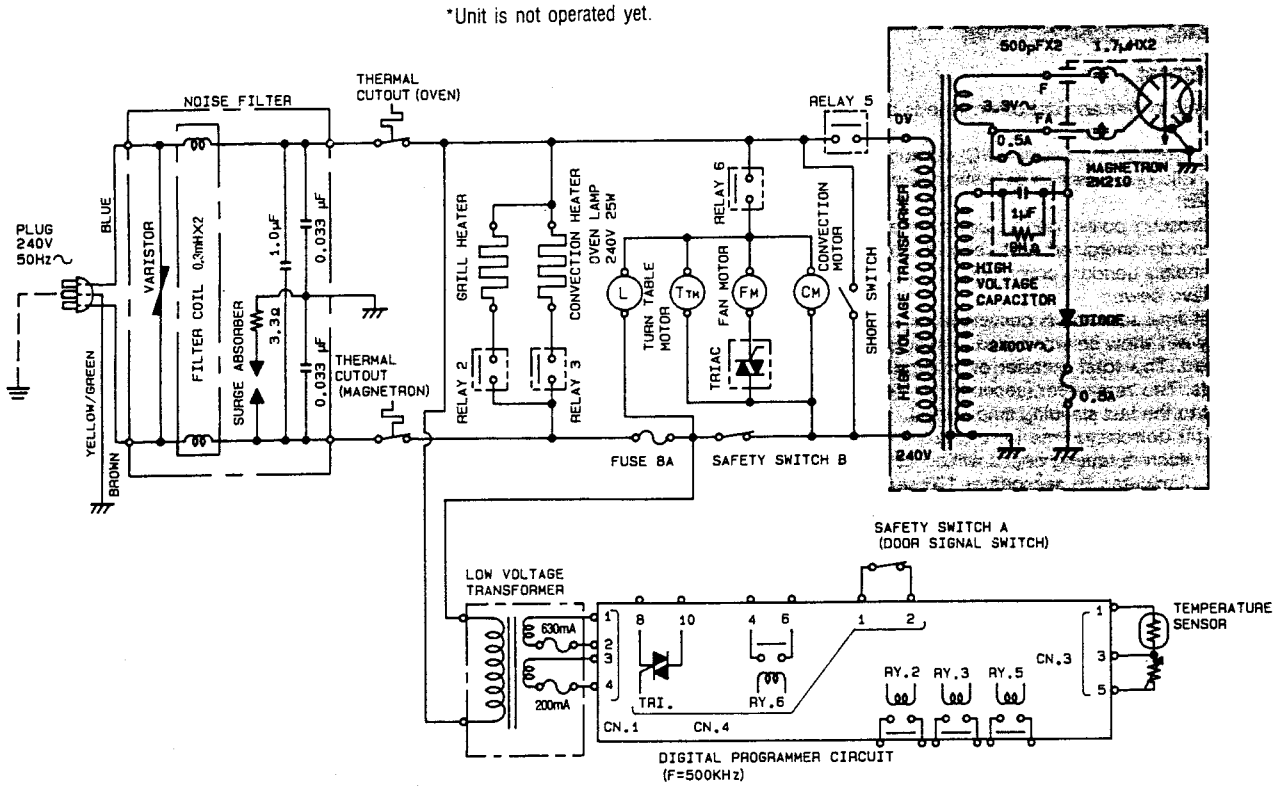
(S-Z73P)

Fig. 1A

SCHEMATIC DIAGRAM (NE-972 BPQ/PPQ)

SCHEMATIC DIAGRAM

Note: *Door is closed.
*Unit is not operated yet.



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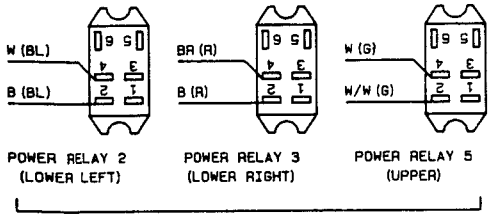
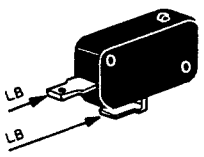
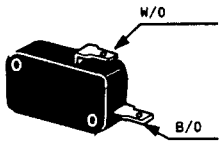
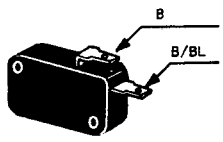








SYMBOL	COLOUR
O	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
G	GREEN
R	RED
LB	LIGHT BLUE
B	BLACK

(S-R7BP)

Fig. 1B

DESCRIPTION OF OPERATING SEQUENCE

1. Variable power cooking control

The coil of power relay (5) is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay (5) contacts in order to vary the output power of the microwave oven from "Warm" to "High" power. One complete ON and OFF cycle of power relay (5) is 22 seconds.

The relation between indications on the control panel and the output of the microwave oven is as shown in **Fig. 2A.**

NOTE: **The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.**

2. Cyclic defrost

When defrost power and defrosting time is selected and Start pad is touched:

(A) The digital programmer circuit (DPC) divides the total defrosting time into 8 intervals of alternating defrosting power and standing periods. (See **Fig. 2B**)

(B) During defrosting power period, power relay (5) is energized for 10 seconds and de-energized for 12 seconds by DPC. (See **Fig. 2C**)

(C) During Standing periods, power relay (5) is always open resulting in no microwave power.

NOTE: **Defrost time selected is converted into seconds by the DPC but display will show selected time in minutes and seconds as programmed. The total number of seconds is divided into 8 time periods. The remainder (seconds not equally divisible by 8) are added to the last standing time period.**

Example # 1: If defrosting time is selected for 2 minutes 56 seconds, each operating period will be as follows: (See **Fig. 2D**)
2 minutes 56 seconds = 176 seconds 176/8 = 22

Example # 2: If defrosting time is selected for 5 minutes, each operating period will be as follows : (See **Fig. 2E**)
5 minutes = 300 seconds
300/8 = 37 and remainder is 4 seconds.
The 4 seconds is added to the last time period.

NOTE: **When defrosting time is selected for not more than 7 seconds, the power relay (5) will not be energized at all.**

Power setting	Output Power	On-Off Time of Power Relay (5)
High	600W (22/22)	22 sec ON, 22 sec ON
Medium	480W (19/22)	19 sec ON, 3 sec OFF, ON, OFF
Low	360W (15/22)	15 sec ON, 7 sec OFF, ON, OFF
Simmer	180W (9/22)	9 sec ON, 13 sec OFF, ON, OFF
Warm	70W (4/22)	4 sec ON, 18 sec OFF, ON, OFF
	Approx. 120W	Refer to description of cyclic defrost.

Fig. 2A

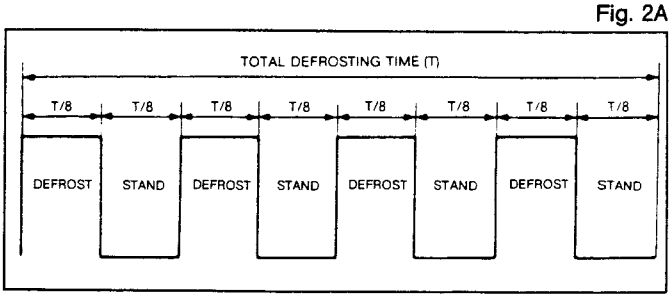


Fig. 2B

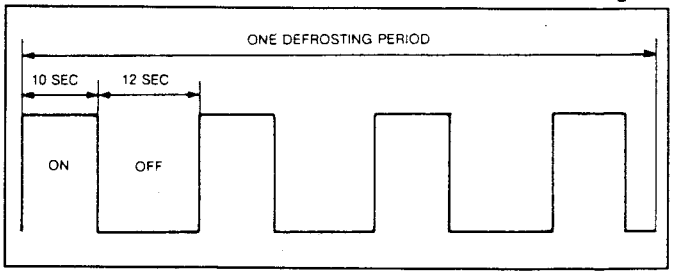


Fig. 2C

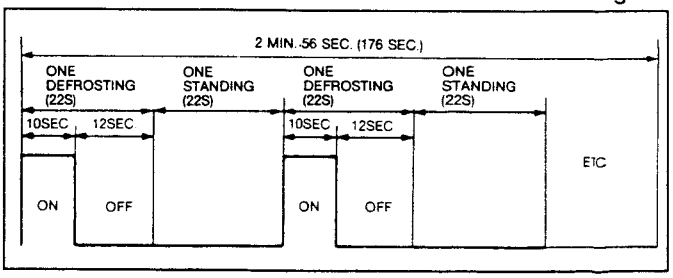


Fig. 2D

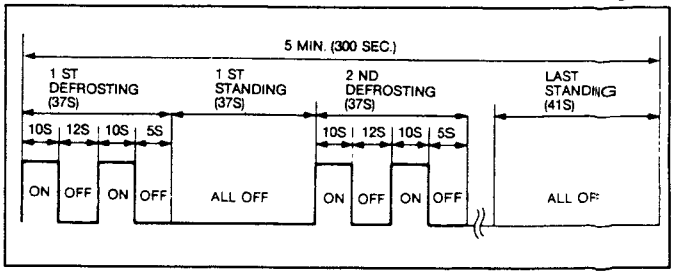


Fig. 2E

3. Auto weight defrost control (⁂)

Consists of the following pads:
- Auto Weight Defrost Pad (⁂)
- kg/lb convert Pad
- Weight Pads
- Start Pad

When the Auto Weight Control, Defrost feature is selected and the Start Pad is tapped:

(A) The digital programmer circuit determines the power levels and defrosting time to complete defrosting and indicates the operating state in the display window.
Fig. 3 shows the defrosting times for respective weights by categories.

(B) When defrosting time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

Auto Weight Defrost (⁂) (For NE-992, NE-993 only)

WEIGHT SELECTED	DISPLAY	TOTAL DEFROSTING TIME			
		CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
1 kg	1.0 kg	34 min. 00 sec.	41 min. 30 sec.	45 min. 00 sec.	17 min. 30 sec.
2 kg	2.0 kg	1 hour 08 min.	1 hour 23 min.	1 hour 30 min.	35 min. 00 sec.
3 kg	3.0 kg	—	2 hour 04 min.	2 hour 15 min.	—
4 kg	4.0 kg	—	2 hour 46 min.	—	—
5 kg	5.0 kg	—	3 hour 27 min.	—	—
1 LB	1 lb 00 oz	15 min. 12 sec.	19 min. 12 sec.	20 min. 48 sec.	8 min. 00 sec.
2 LB	2 lb 00 oz	30 min. 24 sec.	38 min. 24 sec.	41 min. 36 sec.	16 min. 00 sec.
3 LB	3 lb 00 oz	45 min. 36 sec.	57 min. 36 sec.	1 hour 02 min.	24 min. 00 sec.
4 LB	4 lb 00 oz	1 hour 00 min.	1 hour 16 min.	1 hour 23 min.	32 min. 00 sec.
5 LB	5 lb 00 oz	1 hour 16 min.	1 hour 36 min.	1 hour 44 min.	40 min. 00 sec.
6 LB	6 lb 00 oz	—	1 hour 55 min.	2 hour 04 min.	—
7 LB	7 lb 00 oz	—	2 hour 14 min.	2 hour 25 min.	—
8 LB	8 lb 00 oz	—	2 hour 33 min.	—	—
9 LB	9 lb 00 oz	—	2 hour 52 min.	—	—
10 LB	10 lb 00 oz	—	3 hour 12 min.	—	—
11 LB	11 lb 00 oz	—	3 hour 31 min.	—	—

Fig. 3

4. Convection cooking control ( )

The digital programmer circuit controls the ON-OFF time of convection and grill heaters which are located at rear and top of oven cavity respectively in order to control oven cavity temperature.

Normal Convection Cooking

(A) After the start pad is tapped with the desired normal convection programme set, an 18V DC signal comes out of the digital programmer circuit and is applied to the coils of power relays 2 and 3.

(B) When power relays 2 and 3 energize, power source voltage (240V AC) is applied to both convection and grill heaters and oven temperature starts increasing.

(C) When the oven temperature reaches the set temperature, the digital programmer circuit senses the temperature through oven temp sensor and stops supplying an 18V DC signal to the power relays 2 and 3 resulting in both convection and grill heaters to turn off.
After the heaters turn off, the oven temperature will continue increasing a while then decrease as shown in **Fig. 4**.

(D) When the oven temperature drops below the set temperature, the digital programmer circuit senses the oven temperature and starts supplying an 18V DC signal to the coils of power relays 2 and 3 again. Note that grill heater (power relay 2) turns on and off alternatively at predetermined duty cycle (7 sec ON, 15 sec OFF) until oven temperature reaches set temperature again by the signal from digital programmer circuit. (**Fig. 4**)

Dual Shelves Convection Cooking ( )

When the start pad is tapped with dual shelves convection cooking feature selected;

(A) The digital programmer circuit generates the 18V DC of 20 sec ON, 2 sec OFF signals for convection heater (power relay 3) and continued High signal for grill heater (power relay 2) as shown in **Fig. 4** so that both heaters turn on to increase oven cavity temperature.

(B) When the oven temperature reaches set temperature, the digital programmer circuit stops supplying the 18V DC signals to turn both heaters off.

(C) When the oven temperature drops below the set temperature, the digital programmer circuit starts to supply the 18V DC signals again but at different duty ratio as shown in **Fig. 4**.

NOTE: See Fig. 4 for operating sequences of microwave, turntable, fan and convection fan motors during convection cooking mode.

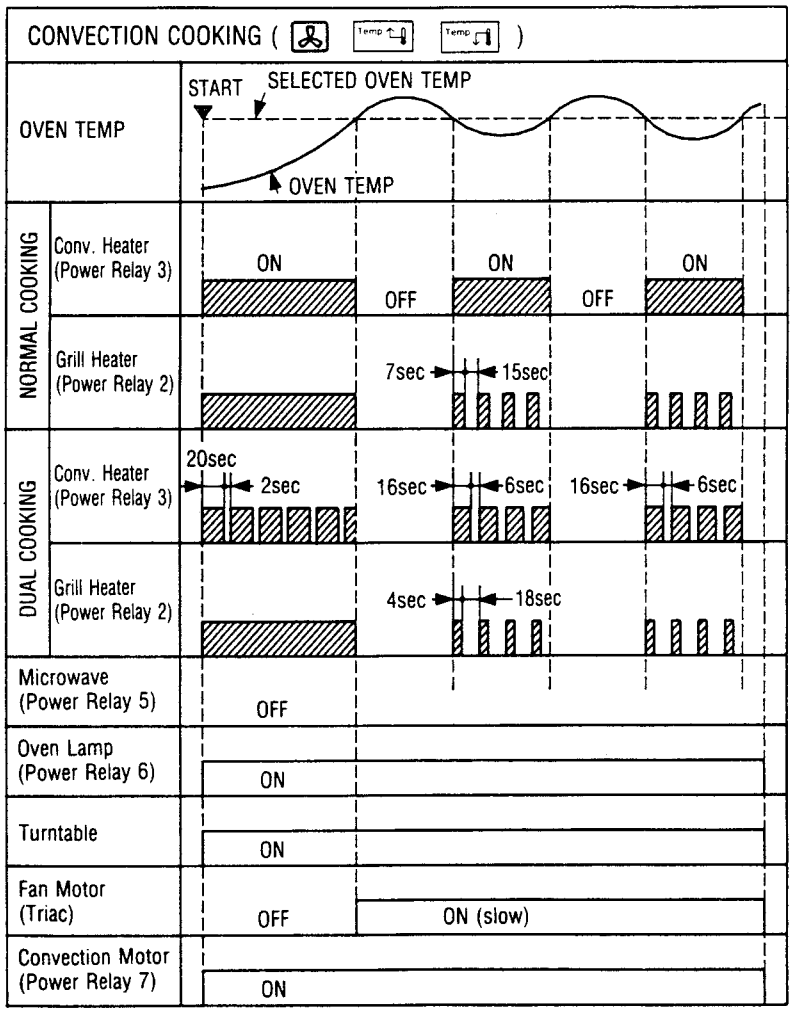


Fig. 4

5. Grill cooking control (▭)

The grill cooking control functions very similarly to convection cooking control except the timing of applicable heaters ON OFF periods.

(A) After the start pad is tapped with the desired grill programme set, the digital programmer circuit generates the 18V DC signals and supplies to power relays 2 and 3 so that both power relays energize to turn on the grill and convection heaters.

(B) When both heaters turn on, the oven temperature rapidly increases and when it reaches 240℃, the digital programmer circuit stops supplying an 18V DC to power relay 3 coil but continues to supply to power relay 2.

(C) The digital programmer circuit continues to supply an 18V DC to power relay 2 for a period of 25 minutes and when 25 minutes have elapsed, the digital programmer circuit starts cycling to supply an 18V DC at a rate of one minute ON and one minute OFF until cooking programme completes.
The convection heater remains off through out the rest of cooking cycle.

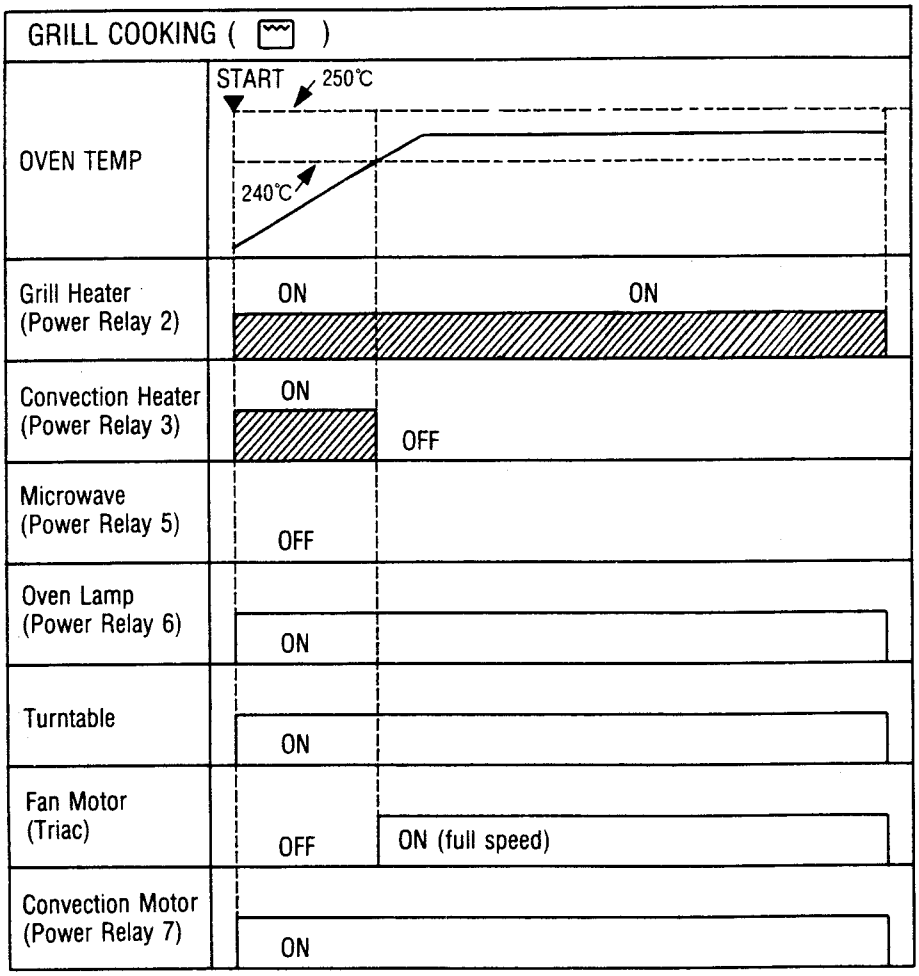


Fig. 5

6. Combination cooking control ( )

Combination cooking is accomplished by microwave and convection cooking being done simultaneously during combination cycles.

When combination categories 1, 2, 3 and 4 are selected;

(A) The digital programmer circuit generates the power relays 2, 3 and 5 control signals at timing shown in **Fig. 6B**.
The power relay 5 (microwave) remains off until oven temperature reaches predetermined temperature which varies by each category number as shown in **Fig. 6A**.

(B) When the oven temperature reaches the predetermined temperature, the digital programmer circuit stops supplying power relays 2 and 3 control signals resulting in both grill and convection heaters to turn off and starts supplying power relay 5 control signal so that microwave activity starts at predetermined duty ratio as shown in **Fig. 6A**.
The microwave activity continues to cycle until entire cooking programme is completed.

(C) When the oven temperature drops below the predetermined temperature, the digital programmer circuit generates power relay 2 and 3 control signals again at the timing predetermined.

NOTE: **The power relays 2, 3 and 5 never turn on at the same time. Either power relay should be always off so that input current always remains within allowable household current (13A).**

COMBINATION CATEGORY		MICROWAVE POWER		OVEN TEMP
		DUTY ON TIME	POWER	
MICROWAVE & CONVECTION COMBINATION	1	6/22 SEC	140 W	160 ℃
	2	10/22 SEC	240 W	200 ℃
	3	7/22 SEC	160 W	180 ℃
	4	9/22 SEC	220 W	180 ℃
MICROWAVE & GRILL COMBINATION	5	15/22 SEC	380 W	approx. 250 ℃
	6	7/22 SEC	160 W	approx. 250 ℃

Fig. 6A

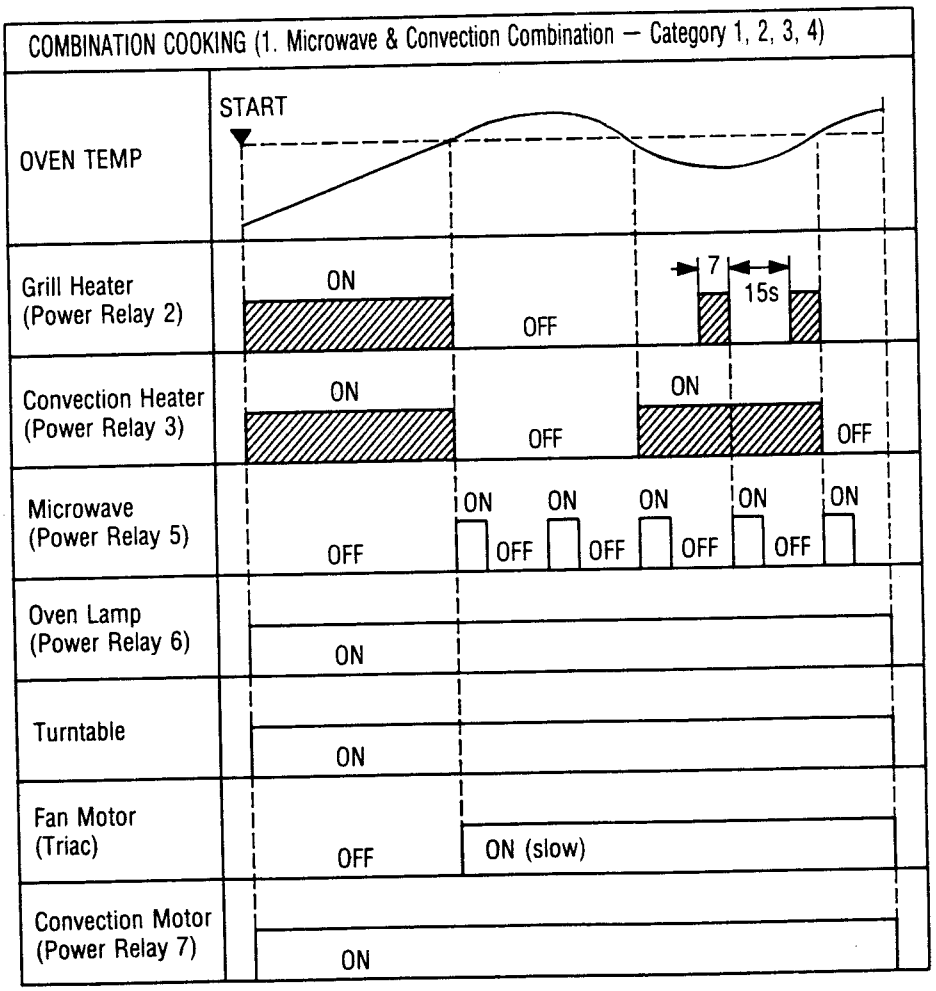


Fig. 6B

When combination category 5 and 6 are selected;

(A) The digital programmer functions exactly the same as when category 1 through 4 are selected until oven temperature reaches 240℃.

(B) When oven temperature reaches 240℃, the digital programmer circuit stops supplying control signal for power relay 3 but continues to supply to power relay 2 and starts supplying the control signal for power relay 5 at the timing shown in **Fig. 7**.
The power relay 3 remains off through out the rest of entire cooking cycle.

(C) After oven temperature reaches 240℃, the microwave activity continues in the rest of entire cooking cycle.

NOTE 1: The power relays 2, 3 and 5 never turn on at the same time. Either power relay should be always off so that input current always remains within allowable household current (13A).

NOTE 2: Note that the heater may not be on during a heater on period if the predetermined oven temperature has been reached.

NOTE 3: **Fig. 6A** shows the predetermined microwave power and oven temperature for each category pad. Each programme is preprogrammed in the microprocessor.

NOTE 4: The fan motor speed differs depending on the category pads. When categories 1 through 4 are selected, the fan rotates at slower speed while category 5 and 6 are selected it runs at full speed.

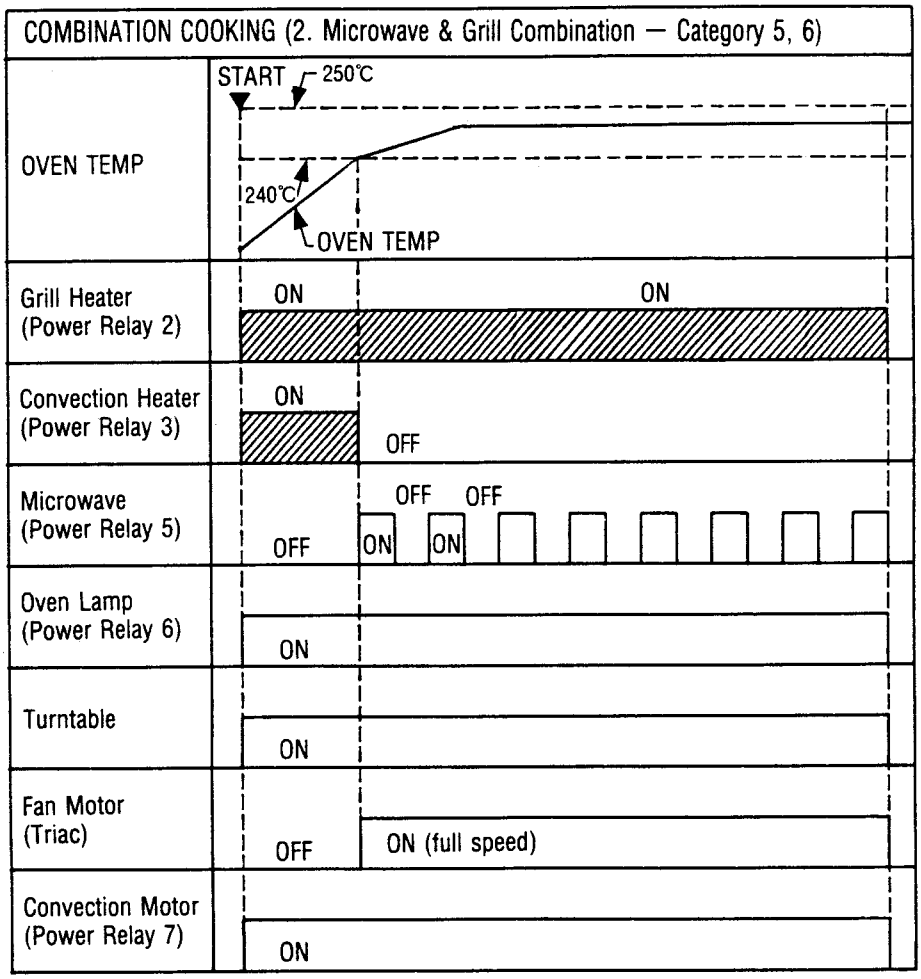


Fig. 7

7. Auto weight combination cooking control ( )

Consists of following pads:
- Auto Weight Control, Combination Pad
- kg/lb Convert Pad
- Weight Pads
- Start Pad

When the Auto Weight Control, Combination Cooking feature is selected by tapping the appropriate key pads and Start pad is tapped.

(A) The digital programmer circuit determines the power level, oven temperature and combination cooking time to complete combination cooking and indicates the operating state in the display window.
Fig. 8 shows the combination cooking times for respective weights by categories.

(B) When the combination cooking time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

NOTE: Refer to cooking pattern of "Microwave & Convection Combination/Fig. 6B." for Auto Weight Combination Cooking.

AUTO WEIGHT COMBINATION

WEIGHT SELECTED	TOTAL COMBINATION COOKING TIME							
	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5	CATEGORY 6	CATEGORY 7	CATEGORY 8
1 kg	30 min. 00 sec. (29 min. 45 sec.)	35 min. 00 sec.	45 min. 00 sec. (44 min. 55 sec.)	35 min. 00 sec.	38 min. 20 sec. (37 min. 55 sec.)	43 min. 20 sec. (43 min. 10 sec.)	23 min. 20 sec.	18 min. 20 sec. (18 min. 05 sec.)
2 kg	1 hour 00 min. (59 min. 30 sec.)	1 hour 10 min.	1 hour 30 min. (1 hour 29 min.)	1 hour 10 min.	1 hour 16 min. (1 hour 15 min.)	1 hour 26 min.	46 min. 40 sec.	36 min. 40 sec. (36 min. 10 sec.)
3 kg	1 hour 30 min. (1 hour 29 min.)	1 hour 45 min.	2 hour 15 min. (2 hour 14 min.)	1 hour 45 min.	1 hour 55 min. (1 hour 53 min.)	2 hour 10 min. (2 hour 09 min.)	1 hour 10 min.	55 min. 00 sec. (54 min. 15 sec.)
4 kg	—	—	—	—	—	—	—	1 hour 13 min. (1 hour 12 min.)
5 kg	—	—	—	—	—	—	—	1 hour 31 min. (1 hour 30 min.)
1 LB	13 min. 36 sec.	16 min. 00 sec.	20 min. 32 sec.	16 min. 00 sec.	17 min. 20 sec.	19 min. 44 sec.	10 min. 40 sec.	8 min. 16 sec.
2 LB	27 min. 12 sec.	32 min. 00 sec.	41 min. 04 sec.	32 min. 00 sec.	34 min. 40 sec.	39 min. 28 sec.	21 min. 20 sec.	16 min. 32 sec.
3 LB	40 min. 48 sec.	48 min. 00 sec.	1 hour 01 min.	48 min. 00 sec.	52 min. 00 sec.	59 min. 12 sec.	32 min. 00 sec.	24 min. 48 sec.
4 LB	54 min. 24 sec.	1 hour 04 min.	1 hour 22 min.	1 hour 04 min.	1 hour 09 min.	1 hour 18 min.	42 min. 40 sec.	33 min. 04 sec.
5 LB	1 hour 08 min.	1 hour 20 min.	1 hour 42 min.	1 hour 20 min.	1 hour 26 min.	1 hour 38 min.	53 min. 20 sec.	41 min. 20 sec.
6 LB	1 hour 21 min.	1 hour 36 min.	2 hour 03 min.	1 hour 36 min.	1 hour 44 min.	1 hour 58 min.	1 hour 04 min.	49 min. 36 sec.
7 LB	1 hour 35 min.	1 hour 52 min.	2 hour 23 min.	1 hour 52 min.	2 hour 01 min.	2 hour 18 min.	1 hour 14 min.	57 min. 52 sec.
8 LB	—	—	—	—	—	—	—	1 hour 06 min.
9 LB	—	—	—	—	—	—	—	1 hour 14 min.
10 LB	—	—	—	—	—	—	—	1 hour 22 min.
11 LB	—	—	—	—	—	—	—	1 hour 30 min.

NOTE: The cooking times shown in the bracket ( ) of CATEGORY 1, 3, 5, 6, 8 are applicable to only for model NE-972. Fig. 8

AUTO SENSOR EXPLANATION, K FACTORS AND POWER LEVELS (For NE-992, NE-993 only)

1. Auto sensor cooking

Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.
All that is necessary is to select an Auto Sensor Program before starting to cook.

Understanding of Auto Sensor Cooking

As a food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, a carefully designed instrument, called the humidity sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE: **Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult Variable Power Microwave Cookbook for procedures.**

2. Auto sensor cooking process

Explanation of the Auto Sensor Cooking process (See Fig. 9A)

1) The shaded columns in the graph indicate when the humidity sensor heater is on.
2) During the first 60 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 60 seconds is subtracted from the T1 time. In other words T1 time starts at the end of the 60 second period. (This 60 second period is needed for the sensor element to stabilize and balance itself to the humidity present before microwave activity starts.)
3) T1 time·····The total amount of time it takes the microwave oven to switch to T2 time after the 60 second period. During this time one of the Auto Sensor programs (A1-A8) will be shown in display.
4) T2 time·····When the steam escapes from the cooking container placed in the oven, the humidity sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

NOTE: **If T1 time is over 60 minutes, oven stops automatically and "FF FF" appears in display window.**

Balance of cooking time (T2 time)

The balance of cooking time which is called T2 time, can be calculated by the following formula.

T2 time (in sec.) =T1 time × K factor

NOTE: **When calculating T2 time, the last digit of T1 time in seconds is cut away. For instance, if the T1 time is 76 seconds, the T2 time will be:**

T2 = 70 × K

Remember, the T1 time starts after the 60 second period. The coefficient K is programmed into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers. (See Fig. 9B)

NOTE: **When "More" or "Less" pad is selected, the K factor varies as shown in Fig. 9B resulting in T2 time to be increased or decreased.**

Some examples of calculating the T2 time

Example 1: If the T1 time is measured to be 2 minutes and 45 seconds after the 60 second period, and the Auto program selected is (COOK) A5:

T2 = T1 × K
= 2 min. and 45 sec. × 2.0
= 160 sec. × 2.0
= 320 sec.
= 5 min. and 20 sec.

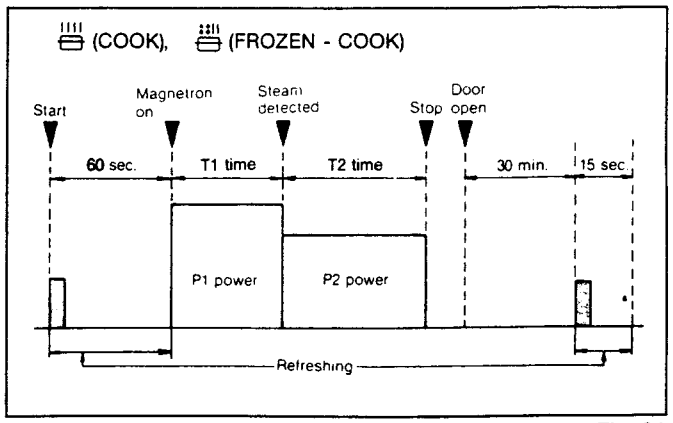


Fig. 9A

(FROZEN — COOK)

	P1 Power	P2 Power	K factor		
			Standard	More	Less
A1	HIGH	HIGH	0.2	approx. 0.2	approx. 0.2
A2	MED	MED	0.7	approx. 0.8	approx. 0.6

(COOK)

	P1 Power	P2 Power	K factor		
			Standard	More	Less
A3	HIGH	HIGH	0.1	approx. 0.1	approx. 0.1
A4	HIGH	HIGH	1.0	approx. 1.2	approx. 0.8
A5	HIGH	HIGH	2.0	approx. 2.4	approx. 1.6
A6	HIGH	MED	1.5	approx. 1.8	approx. 1.2
A7	HIGH	LOW	4.0	approx. 4.8	approx. 3.2
A8	HIGH	LOW	2.0	approx. 2.4	approx. 1.6

Fig. 9B

Example 2: If the T1 time is measured to be 15 minutes and 30 seconds after the 60 second period, and the Auto program selected is (FROZEN-COOK) A2:

T2 = T1 × K
= 15 min. and 30 sec. × 0.7
= 930 sec. × 0.7
= 651 sec.
= 10 min. and 51 sec.

NOTE: **If using a calculator please remember the calculator rounds off in decimal numbers, so the T2 time will come out slightly different than if seconds are changed back to minutes by regular long division. When using a calculator, simply multiply the tenths by 60 to get the correct number of seconds.**
For instance take the T2 time in seconds from Example 2 above. Using the calculator divide 60 into 651 and the quotient will be 10.85. Then multiply 0.85 by 60 and the product will be 51 seconds.

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor (Fig. 10)

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.
When replacing or checking parts, turn the oven off, wait 30 seconds and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated jumper lead wire to discharge.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor even with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

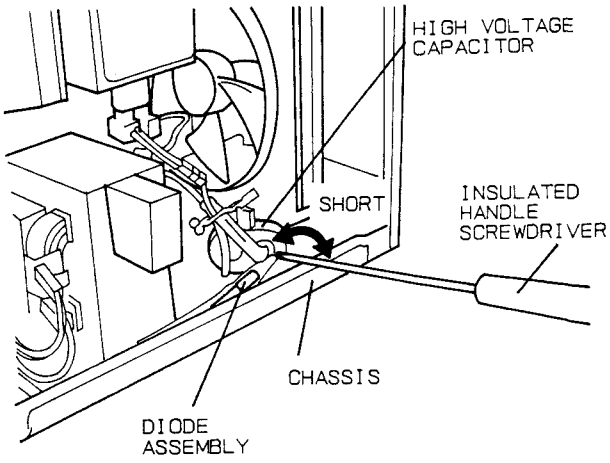
Never insert a wire, nail or any other metal objects through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

5. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.

6. Replacement of the power cable.

When replacing the power cable, the cord bushing and the cord bushing mounting plate should be replaced together.



Touch chassis side first then short to the high voltage capacitor terminal.

Fig. 10

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Replacement of the magnetron (See Fig. 11A & 11B)

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

(A) Discharge the high voltage capacitor. (See page 18.)
(B) Remove 2 screws holding thermal cutout.
(C) Remove a screw holding the reinforcement bracket B to the magnetron case.
(D) Remove air guide A by removing 1 screw holding it to the magnetron case. **(Fig. 11A & 11B)**
(E) Remove 2 high voltage leads from filament terminals.
(F) Remove 4 screws holding the magnetron.

NOTE: To prevent microwave leakage, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron.

CAUTION

When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to "F terminal" and the lead wire with 500mA fuse from high voltage capacitor should be connected to "FA terminal". (See **Fig. 11A & 11B)**

Removal of Positive Lock connector

The positive lock connector is a specially designed loose free connector and you will find this connector in many lead wire connections. To remove this connector, pull the lead wire by pressing an extruded lever in the center of receptacle terminal as shown in **Fig. 11C.**

2. Replacement of the fan motor

(A) Disconnect all lead wires from fan motor, noise filter and high voltage capacitor. (Refer paragraph "Removal of Positive Lock Connector" and **Fig. 11C**.)
(B) Remove 6 screws holding the back panel. **(Fig. 12A)**
(C) Remove 3 screws holding the fan motor bracket. **(Fig. 12B)**
(D) Pull the fan motor with the bracket toward you.
(E) Remove fan blade from the fan motor shaft by pulling it straight out.
(F) Remove the fan motor by removing 2 screws holding it to the fan motor bracket. **(Fig. 12C)**

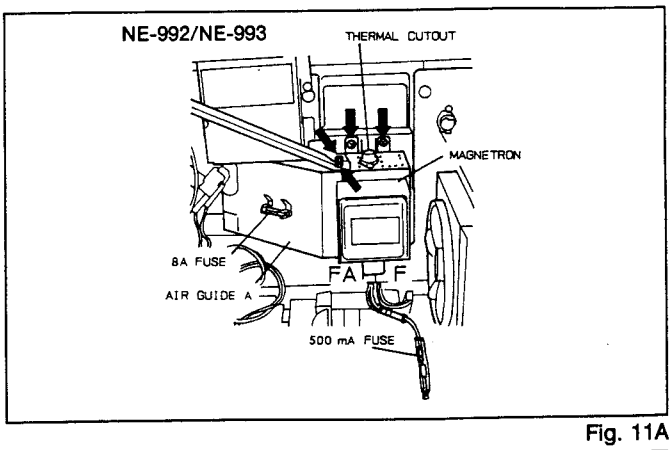


Fig. 11A

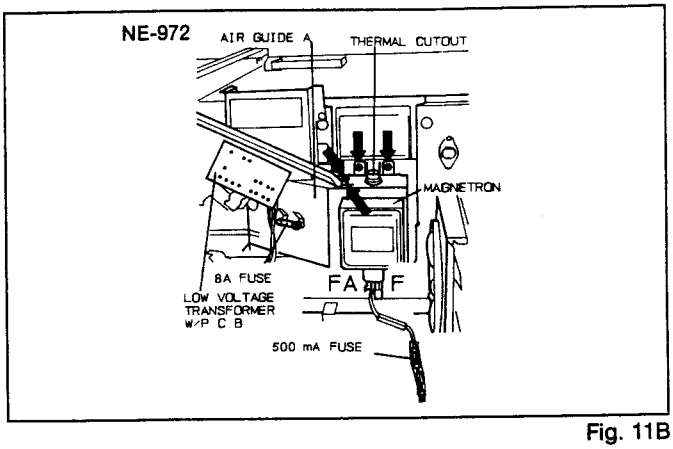


Fig. 11B

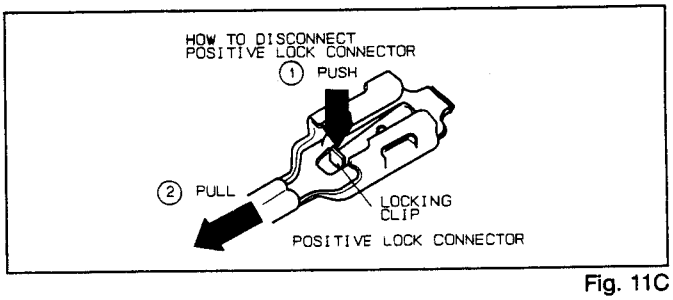


Fig. 11C

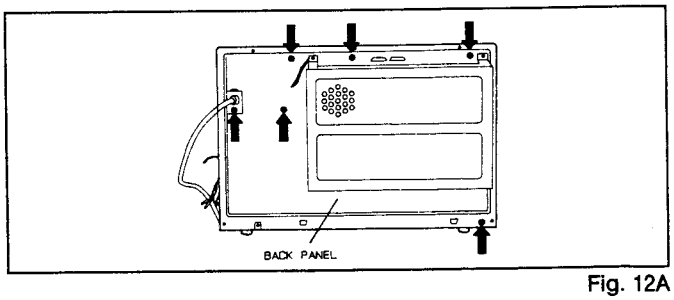


Fig. 12A

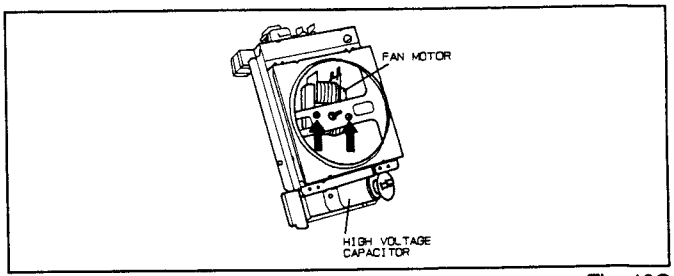


Fig. 12C

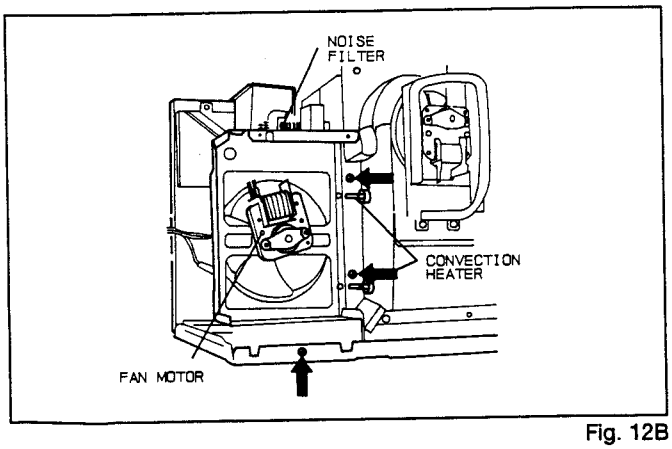


Fig. 12B

3. Replacement of the digital programmer circuit (D.P.C.)

NOTE: Be sure to ground any static electric charge built up in your body, before handling the D.P.C..

(A) Unplug the 5-pin connector (CN3) from the D.P.C..

(B) Unplug the 3-pin connector (CN4) from the D.P.C.. (NE-992, NE-993 only)

Caution when removing connector CN4

This connector is a special type which may be very hard to remove just by pulling directly outward. Instead it can be removed easily by simply grasping it by the ends and rocking it side to side while pulling. **(Fig. 14B)**

(C) Unplug 6-pin (CN5), 6-pin (CN1) and 9-pin (CN6) connectors from the D.P.C..

(D) Disconnect all lead wires from the power relay (2), (3) and (5).

(E) Remove a screw holding the grounding lead wire of D.P.C.. (NE-972 only)

(F) Remove a screw holding the tab of membrane key board.

(G) Remove 2 screws to release escutcheon base assembly. **(Fig. 13A & 13B)**

NOTE: **The escutcheon base assembly is also mounted to oven with a catch hook, located at upper left corner. Release the catch hook by using flat screwdriver or the like when removing.**

(H) Release CN2 connector's lid of DPC and pull off the flat cable of the membrane key board. **(Fig. 14A & 14B)**

(I) Remove 2 screws holding the DPC. **(Fig. 14A & 14B)**

(J) Separate the DPC from escutcheon base by carefully freeing the 2 catch hooks on escutcheon base while pulling outward.

To be continued for replacement of the membrane key board

(K) Push the corner part of membrane key board (point A in **Fig. 15**) from back side of escutcheon base by using flat screwdriver or the like and peel off the membrane key board from escutcheon base. **(Fig. 15)**

NOTE: **The membrane key board is attached to the escutcheon base with double faced adhesive tape.**

Installation procedure of membrane key board

(A) Insert the flat cable and grounding tab of membrane key board to holes of escutcheon base.

(B) Set the right side edge of key board to the right side bezel of escutcheon base.

(C) Insert the left side edge of key board to the left side bezel of escutcheon base while expand the center line of membrane key board.

(D) Press down the membrane key board by soft cloth.

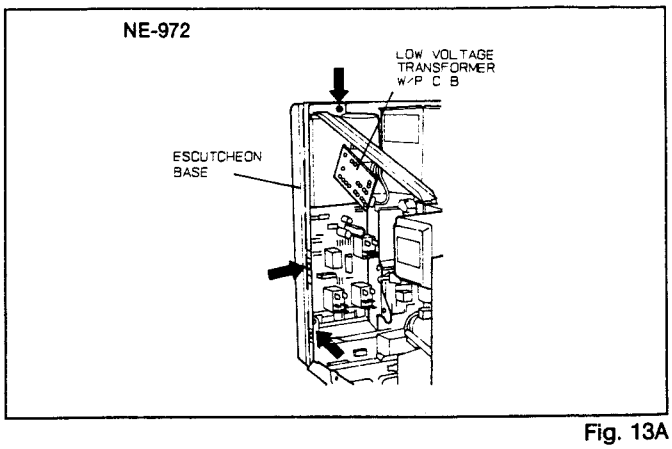


Fig. 13A

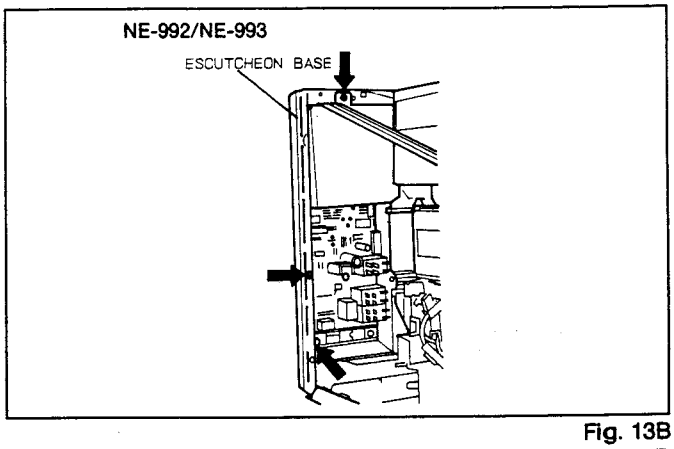


Fig. 13B

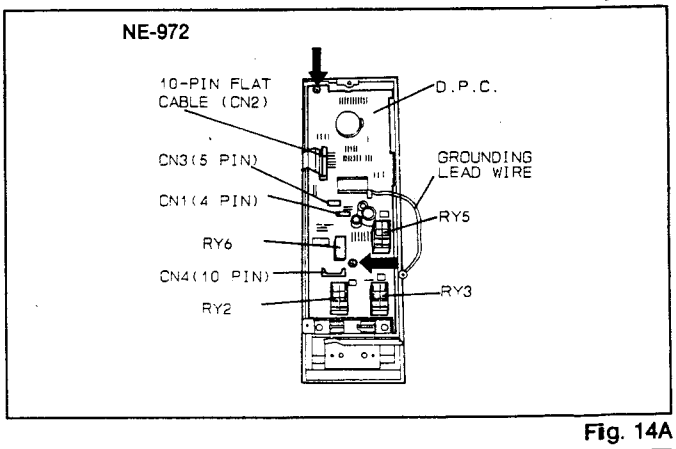


Fig. 14A

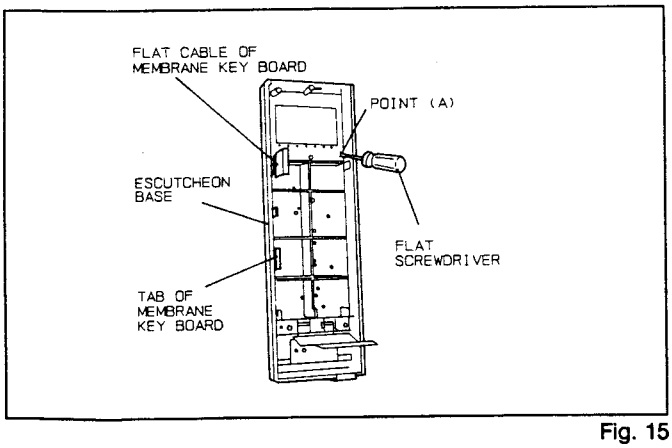


Fig. 15

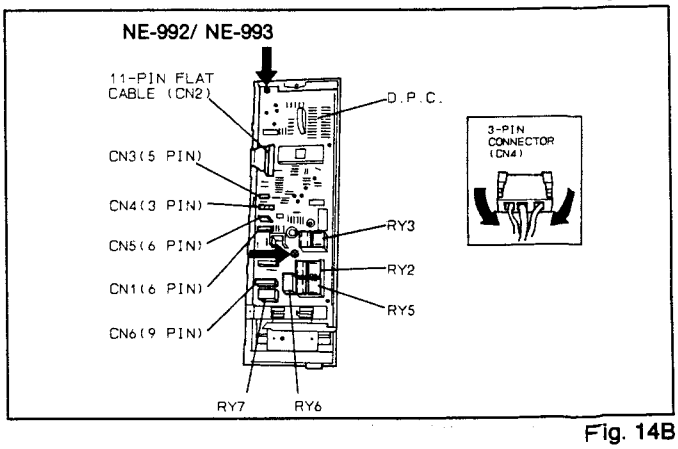


Fig. 14B

4. Replacement of the power relays (RY2, RY3, RY5, RY6, RY7) on the D.P.C.. (Fig. 14A & 14B)

(A) Using solder wick or a desoldering tool, carefully remove all solder from the terminal pins of power relays.
NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on the D.P.C. contacts.
(B) With all the terminal pins cleaned and separated from the D.P.C. contacts, remove the defective power relay and install new power relay making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

5. Replacement of the convection heater and convection motor

(A) Disconnect 3 lead wires of power supply cord from noise filter and fan motor bracket.
(B) Remove 6 screws holding the back panel. (**Fig. 12A**)
(C) Remove 3 screws holding the fan motor bracket. (**Fig. 12B**)
(D) Disconnect 2 lead wires from convection motor.
(E) Remove oven temp sensor by removing 2 screws. (**Fig. 16C**)
(F) Remove 2 convection heater lead wires by removing screws.
(G) Remove 10 screws holding heater panel. (8 screws for back side, 2 screws for inside of oven cavity) (**Fig. 16A & 16B**)

When replacing heater

(H) Remove spring (speed) nuts from heater terminals. (**Fig. 16C**)
(I) Remove the convection heater from back panel and heater supports. (**Fig. 16C**)

When replacing convection motor

(J) Remove washer, fan spacer B, circulation fan blade and fan spacer A by removing nut. (**Fig. 16C**)
NOTE: This nut is counterclockwise type.
(K) Remove convection motor bracket by removing 3 screws. (**Fig. 16C**) (The fan blade is released same time.)
(L) Remove convection motor by removing 2 screws. (**Fig. 16C**)
(M) Remove U ring from motor shaft. (**Fig. 16C**)

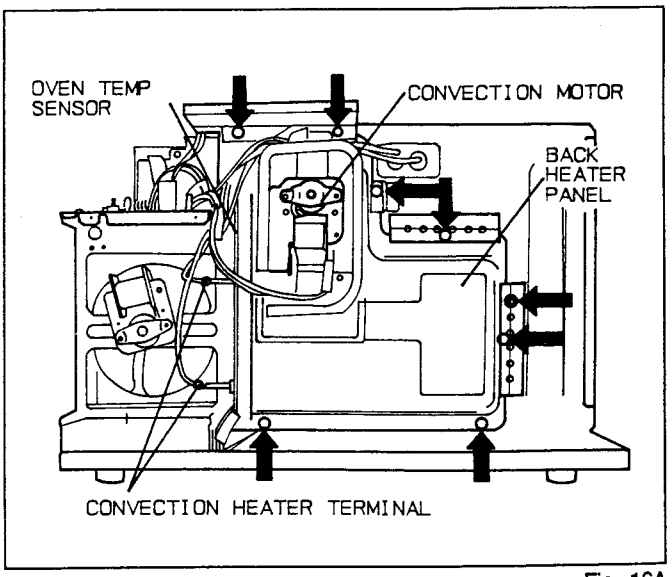


Fig. 16A

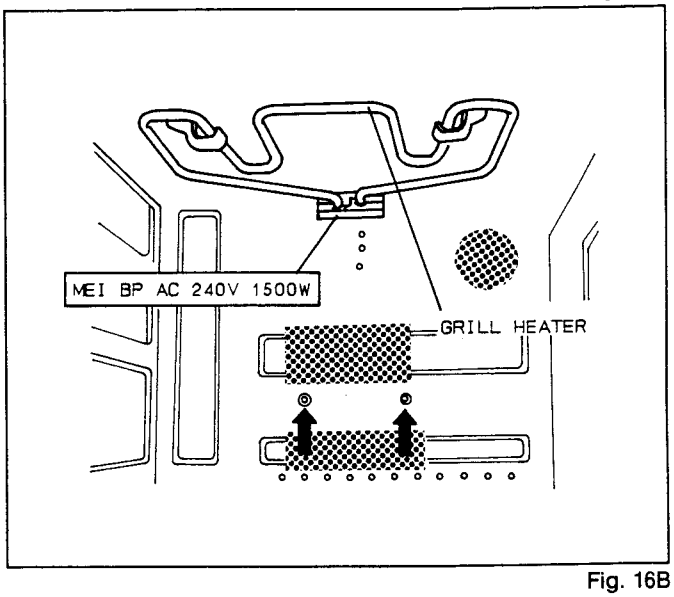


Fig. 16B

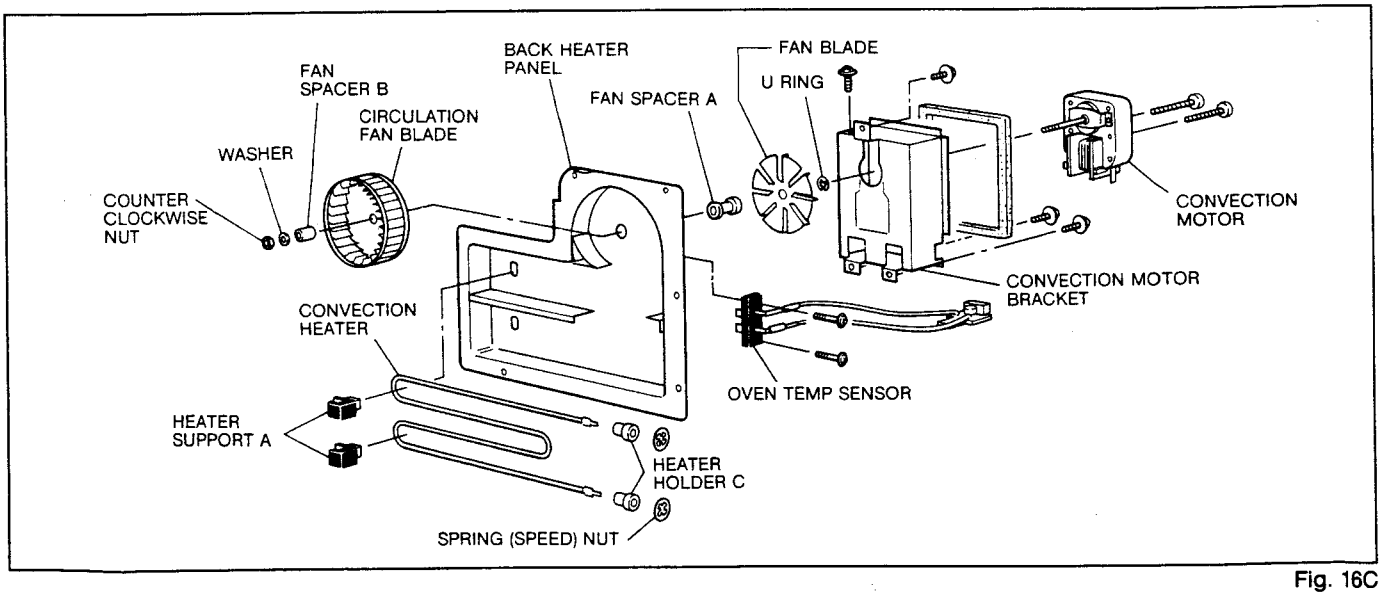


Fig. 16C

6. Replacement of the grill heater

(A) Disconnect 3 lead wires of power supply cord from noise filter and fan motor bracket.
(B) Remove 6 screws holding the back panel. **(Fig. 12A)**
(C) Remove 2 grill heater lead wires by removing screws.
(D) Remove 3 screws holding grill heater. **(Fig. 16D)**
(E) Remove spring (speed) nuts from heater terminals.
NOTE: **Install new grill heater as its rating plate will make illustrated direction. (Fig. 16B)**

7. Disassembly and replacement of the door assembly

(A) Remove 3 bolts holding the upper hinge to the oven assembly.
(B) Open the door assembly and while pulling the door assembly toward you, work the upper hinge out through the hole in the oven assembly. The door assembly will be simply lifted off bottom hinge pin at the same time.
NOTE: **Do not lose spacer at the bottom hinge. (Fig. 17A)**
(C) Place a protective pad or soft cloth on working table so as to prevent scratches on door screen B.
(D) Remove 4 screws holding the door C. **(Fig. 17A)**
(E) Remove the door C by carefully pulling outward starting from the upper right hand corner.
(F) Remove door key spring and remove 3 screws holding door handle. **(Fig. 17B)**
(G) Separate the door A from door E by carefully freeing the 10 catch hooks on door A while pulling outward. **(Fig. 17C)**
(H) Remove door keys, door key lever and handle pins from the door E. **(Fig. 17B)**
(I) When mounting the door assembly to the oven assembly, be sure to adjust the door assembly parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment. **(Fig. 17D & 17E)** Also adjust so that the door has no play between the inner door surface and oven frame assembly. If the door assembly is not mounted properly, microwaves may leak from the clearance between the door and the oven.

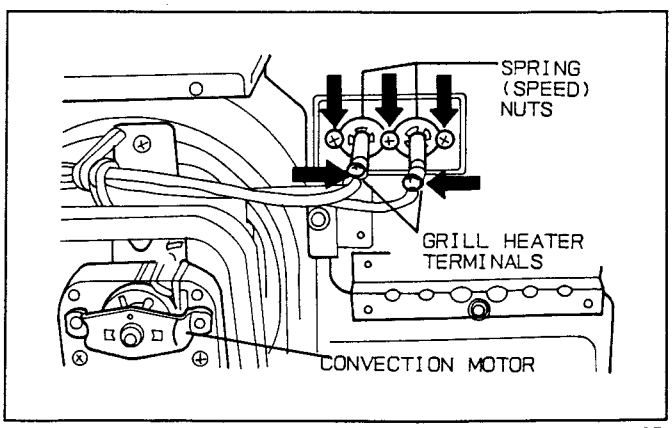


Fig. 16D

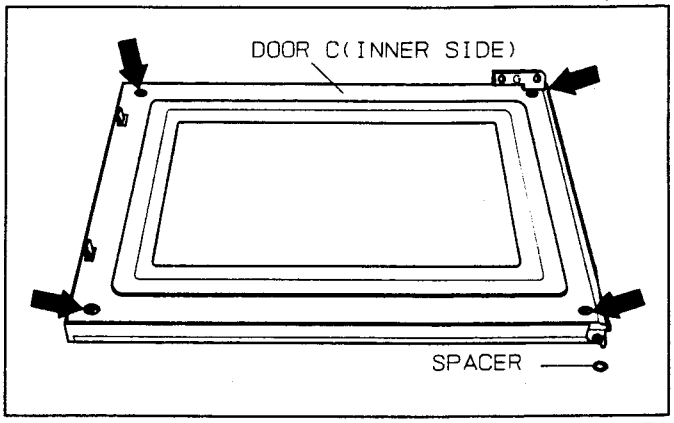


Fig. 17A

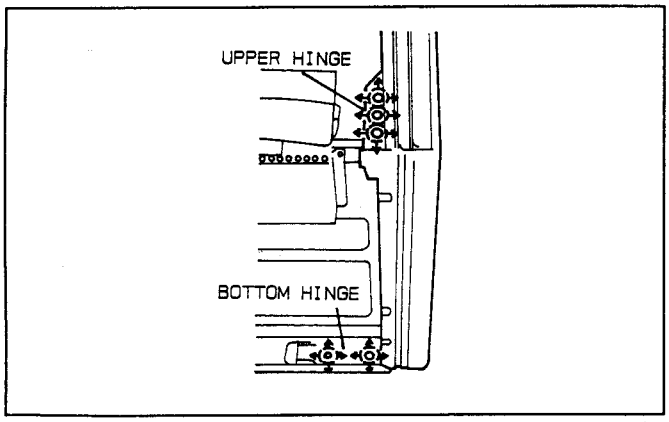


Fig. 17D

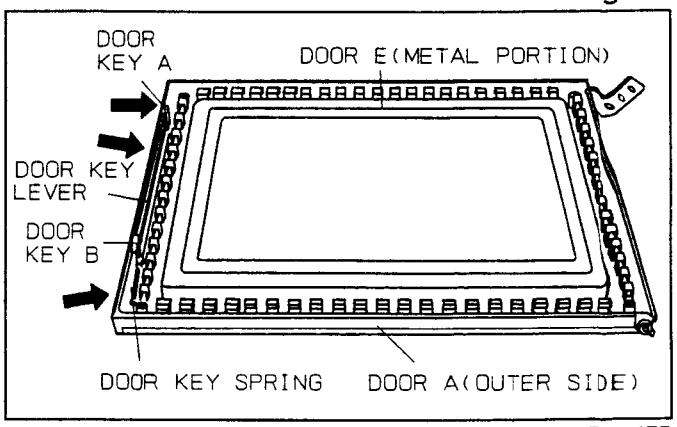


Fig. 17B

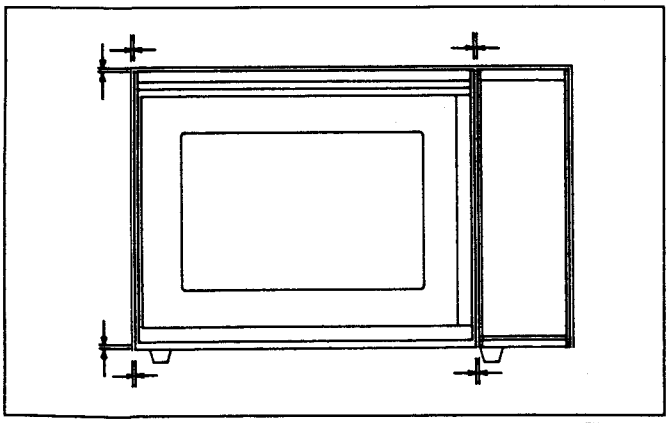


Fig. 17E

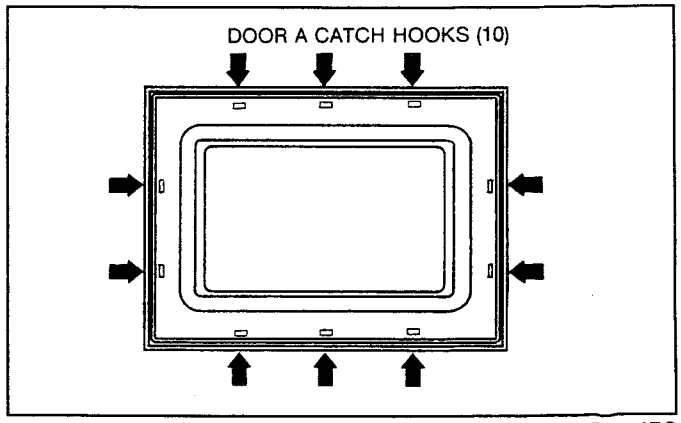


Fig. 17C

COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitor. (See page 18.)

1. High voltage transformer (refer to Fig. 18)

(A) Remove connections from the transformer terminals and check continuity.
(B) Normal (cold) resistance readings should be as follows:

Secondary winding	Approx. 80Ω ~ 120Ω
Filament winding	Approx. 0Ω
Primary winding (0V ~ 240V)	Approx. 0Ω ~ 3Ω

2. High voltage capacitor

(A) Check continuity of capacitor with ohmmeter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
((Due to internal 9MΩ resistor))
(E) Resistance between each terminal and chassis should be infinite.

3. Diode assembly with 500 mA fuse (Fig. 19)

(A) Isolate the diode assembly from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.
A normal diode's resistance will be infinite in one direction and several hundred KΩ in the other direction.

NOTE: If 500 mA fuse is open, replace as diode assembly with 500 mA fuse.

4. Magnetron (Fig. 20)

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.

5. Membrane key board (Membrane switch assembly) (Fig. 21A & 21B)

Check continuity between switch terminals, by pressing an appropriate pad on the key board.
The contacts assignment of the respective pads on the key board is as shown in **Fig. 21A & 21B**.

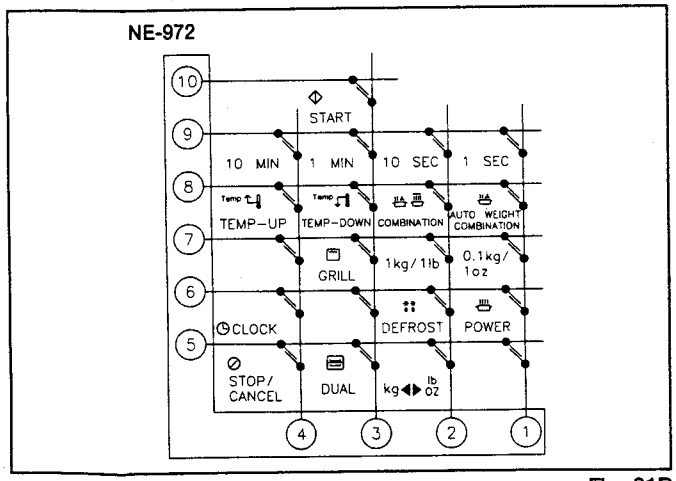


Fig. 21B

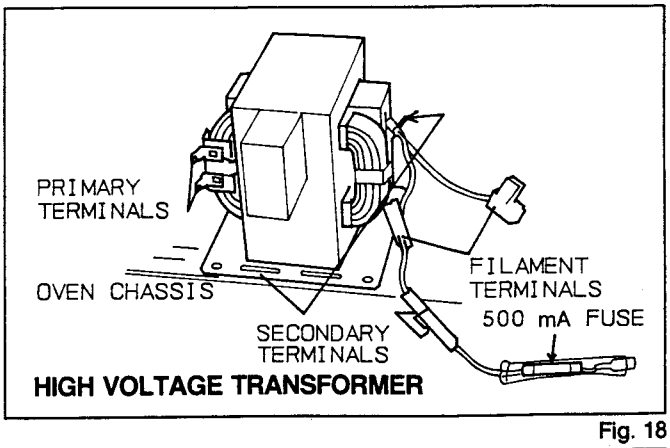


Fig. 18

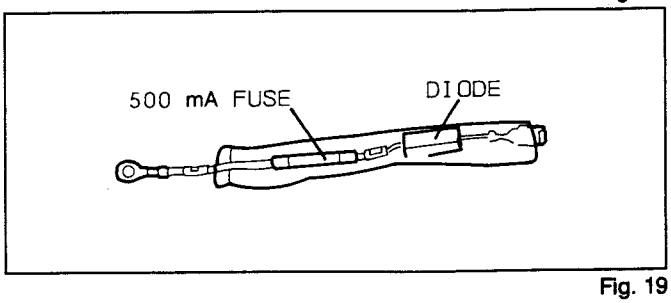


Fig. 19

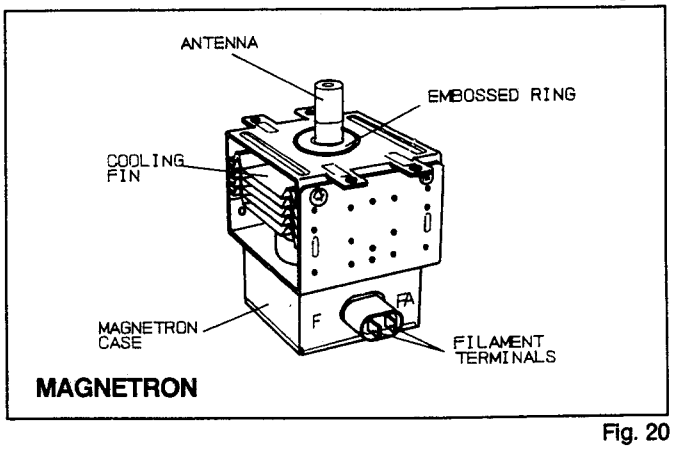


Fig. 20

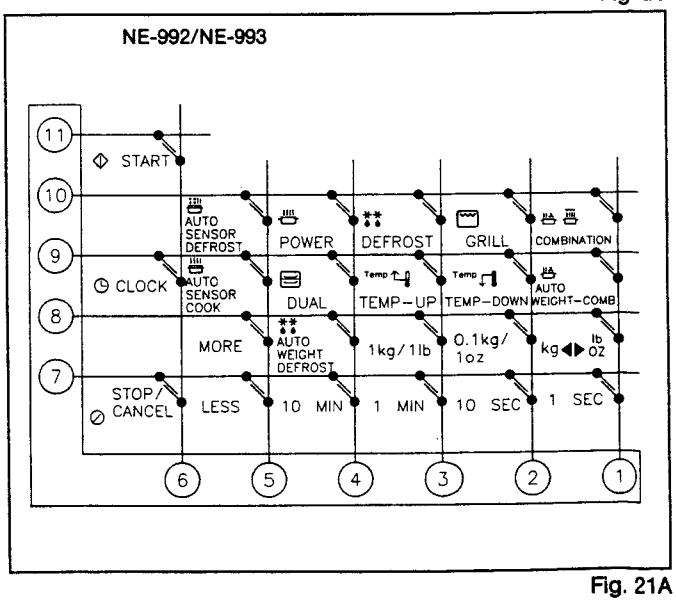


Fig. 21A

6. Humidity Sensor and digital programmer circuit (Fig. 22) (For NE-992/NE-993 only)

CAUTION

Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
Always ground yourself while working on this panel to discharge any static charge built up in your body.

(A) Check across sensor heater terminals. Normal cold resistance should read approx. 6 ohm.
(B) In order to determine if the Auto Sensor function of the digital programmer circuit is in working order or not, do the following test.
1) Place a water load in the oven.
2) Unsolder 2 shielded wires connected to sensor terminals.
3) Tap Auto Sensor Cook Control Pad twice to set auto sensor cooking at A4 and tap Start Pad.
4) About 10 seconds after Start Pad is touched, short shielded wires for 5 seconds and then remove them. Before shorting the shielded wires you can watch the sensor heater glow red.
5) The oven lamp will dim a little, about 60 seconds after the Start Pad is tapped. This indicates that magnetron has started oscillation.
6) After approx. *10 seconds (T1 TIME), short the shielded wires again.
7) Category number "4" stays on and following digits (see chart) should appear indicating **additional cooking time (T2 TIME).
The time should start to count down and oven should shut off when the time has elapsed.

* T1 TIME	** T2 TIME (Additional Cooking Time)
10 sec.~19 sec.	10 sec.
20 sec.~29 sec.	20 sec.

The Auto Sensor function in the digital programmer circuit is working in order if above condition is obtained.

7. Low voltage transformer

Check the voltage of secondary winding of the low voltage transformer (L.V.T.). The normal voltages of the L.V.T. with no load should read as shown in **Fig. 23A & 23B**.
When measuring the voltage of L.V.T., measure the voltage between each pin of the L.V.T. with the connector (CN1) unplugged.

CAUTION

A 240V AC is present at the primary circuit of the low voltage transformer. When checking the secondary voltage of low voltage transformer, be cautious of possible shock hazard.

8. To test the oven temp sensor thermistor

This sensor monitors the heat produced by the heater circuit and maintains the oven temperature the user had selected normal room temperature, especially in a kitchen can vary anywhere from 10°C to 32°C. The reading across the oven sensor thermistor should be within 360K ohm to 800K ohm when read in an area within the 10°C to 32°C room temperature range.
If the resistance reading is out of the range stated here, the sensor is defective and must be replaced.

NOTE 1: When measuring resistance disconnect the 5-pin connector (CN3) from the DPC otherwise a false reading may be indicated.

NOTE 2: If checking an oven sensor thermistor just after the microwave oven has been operating, the sensor of course won't be room temperature. In this case the sensor must be removed and allowed to cool down to the 10°C to 32°C range.

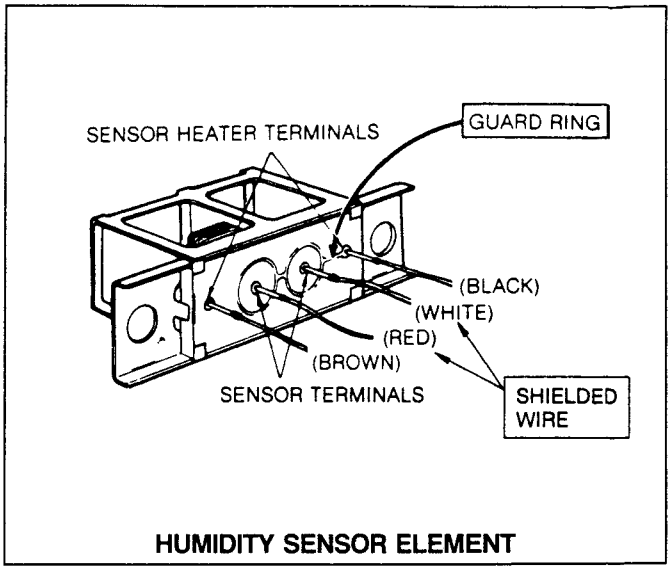


Fig. 22

For NE-992/NE-993

PIN NO. OF L.V.T	SECONDARY VOLTAGE
S1 - S2	AC 14.7V ± 10%
S3 - S4	AC 19.9V ± 10%
S5 - S6	AC 3.58V ± 10%

Primary voltage·····AC 240V

Fig. 23A

For NE-972

PIN NO. OF L.V.T	SECONDARY VOLTAGE
S1 - S2	AC 16.0V ± 10%
S3 - S4	AC 2.65V ± 10%

Primary voltage·····AC 240V

Fig. 23B

MEASUREMENTS AND ADJUSTMENTS

1. Adjustment of safety switch A

(A) When mounting the safety switch A to the door hook A, mount the safety switch A to the door hook A as shown in **Fig. 24.**

NOTE: **No specific adjustment during installation of safety switch A to the door hook A is necessary.**

(B) When mounting the door hook A assembly to the oven assembly, be sure to adjust the door hook A assembly by moving in the arrow direction so that the oven door will not have any play in it. **(Fig. 25)**
Check for play in the door by pulling the door.
Make sure that the latch key positions correctly during adjustment. Also make sure that the latch key moves smoothly after adjustment is completed. Securely tighten the screws holding the door hook assembly to the oven assembly.

2. Adjustment of safety switch B and short switch

(A) When mounting the safety switch B and short switch to the door hook B assembly, mount the safety switch B and short switch to the door hook B assembly as shown in **Fig. 26.**

NOTE: **No specific adjustment during installation of safety switch B and short switch to the door hook B is necessary.**

(B) When mounting the door hook B assembly to the oven assembly, adjust the door hook B by moving it in the direction of arrow in **Fig. 25** so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch key moves smoothly after adjustment is completed. Securely tighten the screws holding the door hook B assembly to the oven assembly.

3. Measurement of microwave output

The power output of the magnetron can be determined by performing a simple water heating test as described below.
Necessary Equipment:
*Two 1 litre beakers *Glass thermometer
*Wrist watch or stopwatch

NOTE: **Check the line voltage under load. Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurate as possible.**

(A) Fill each beaker with exactly one litre of tap water. Stir the water using the thermometer and record each beaker's temperature (recorded as T1A and T1B).

(B) Place both beakers on the center of glass cook plate.
Set the oven for High power and heat it for exactly two minutes.

(C) Stir the water again and read the temperature of each beaker (recorded as T2A and T2B).

(D) Obtain the temperature rise by using the following formula:

$$\text{Average temperature rise} = \frac{(T2A + T2B) - (T1A + T1B)}{2}$$

The normal temperature rise for these models should be 7.7° to 9.9°C at the "High" power selection with the oven operating at the specified line voltage.

(E) To obtain the power output, multiply the average temperature rise by 70.
Example:
If you find average temperature rise of 8.5°C, the ovens output is
8.5 × 70 = 595 watts.

NOTE: **This test may be conducted by heating one litre of water for one minute if only one beaker is available. In this instance you will find the temperature rise being smaller than the above specifications due to the microwave absorption characteristic. You may judge the magnetron to be normal when the temperature rise is greater than 6.5°C.**

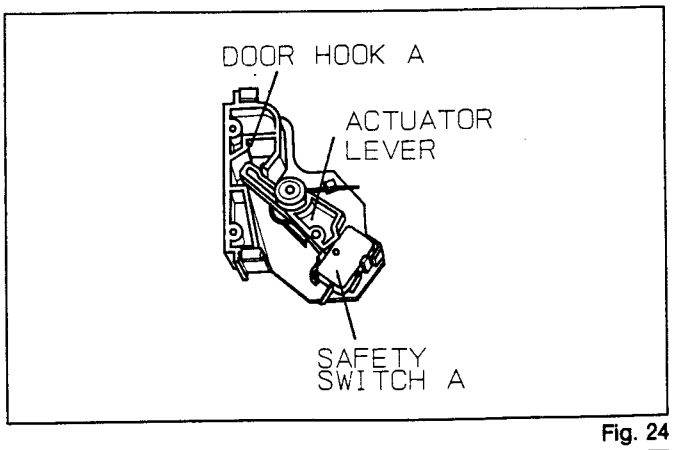
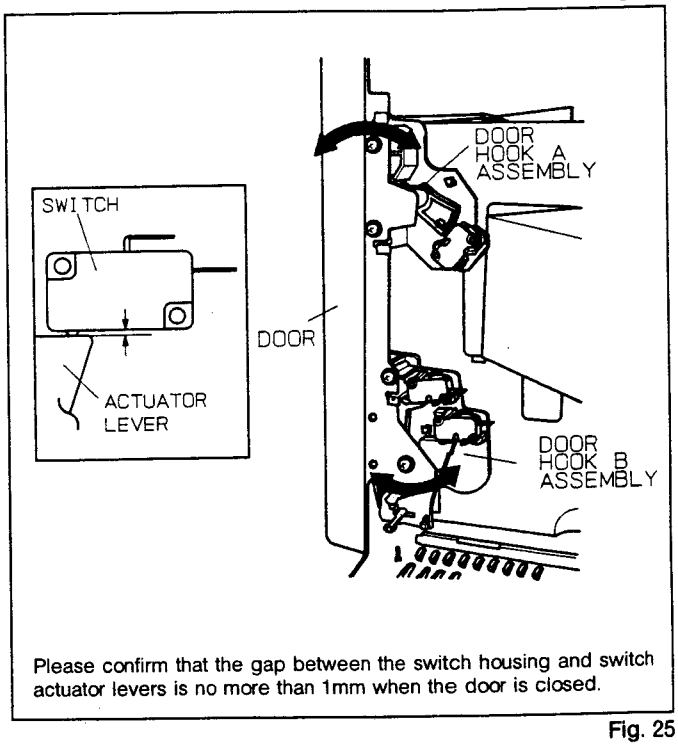


Fig. 24



Please confirm that the gap between the switch housing and switch actuator levers is no more than 1mm when the door is closed.

Fig. 25

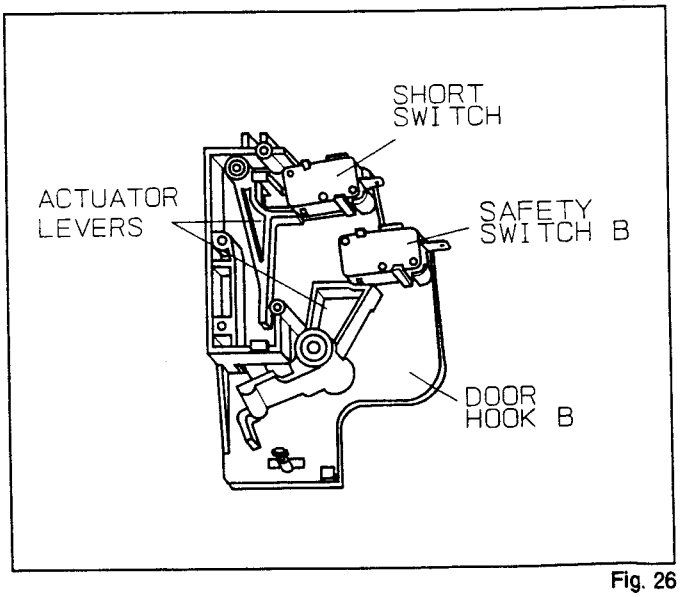


Fig. 26

TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor. (See page 18.)
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.
6. When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot be removed.
7. A 240V AC is present at the shaded area ▨ of the digital programmer circuit (Terminals of power relays 2, 3, 5, 6, 7 and Triac etc.).
   When troubleshooting, be cautious of possible electrical shock hazard.

First of all operate the microwave oven following the correct operating procedures described on pages 33 ~ 49 in order to find the exact cause of any trouble.

[TROUBLE 1] The following visual conditions indicate a probable defective digital programmer circuit (D.P.C.) or membrane key board (membrane switch assembly).

A. In case of following conditions, D.P.C. is defective.

1. Incomplete segments.
   (A) Segments missing.
   (B) Partial segments missing.
   (C) Digit flickering other than normal fluorescent slight flickering.
   (D) Colon does not turn on or does not blink when the clock pad is tapped.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display not on when they should be.
4. Wrong or no power indicator light for power level selected.
5. Specific numbers (for example 2 or 3) will not display.
6. Display does not count down with time cooking or when using display as a timer.
7. Display does not count up with clock operation.
8. Oven is programmable and cooks normally but no display shows.
   NOTE: Check 400 mA/FUSE 5 for NE-992/993 (200 mA/FUSE 4 for NE-972) also.
9. Display obviously jumps in time while counting down or up.
10. Display counts down noticeably too fast while cooking.
11. Display cannot shift from the first stage cooking to the second stage cooking even though Two Stage Cooking is programmed.
12. Display does not stop counting down with time cooking even when Stop/Cancel Pad is tapped.
13. Time of day does not reappear when cooking is finished.

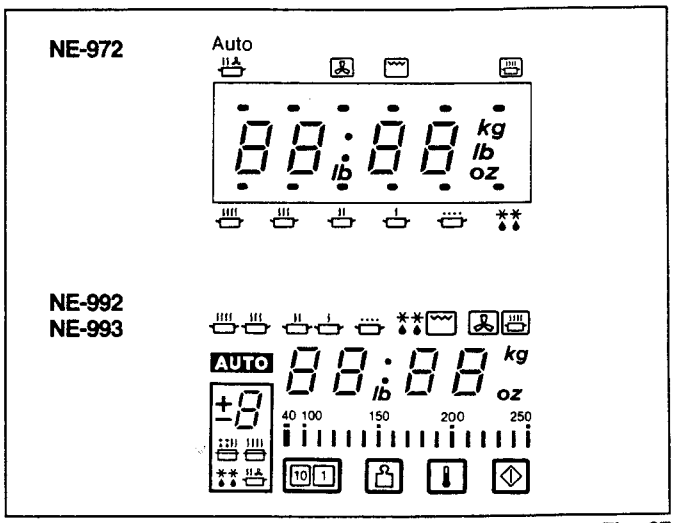


Fig. 27

B. In case of following conditions, either D.P.C. or membrane switch is defective.

CHECK	RESULT	CAUSE	REMEDY
1. Clock set cannot be programmed at all.			
Check continuity of membrane switch with clock pad tapped. For NE-972···between terminals 6 and 4 For NE-992/993···between terminals 6 and 9	No continuity	Defective membrane switch	Replace
	Continuity	Defective DPC	Replace
2. Some inputs cannot be programmed.			
Check continuity of membrane switch (Refer to page 23 for the test procedures of membrane switch)	Some pads have no continuity	Defective membrane switch	Replace
	Normal	Defective DPC	Replace
3. Display indicates a number or figure different from one touched. Random programming when pressing other than touch pads or without pressing any at all. (intermittently)			
Replace membrane switch and recheck	Everythings works as specified	Defective membrane switch	Replace
	Still have trouble	Defective DPC	Replace

[TROUBLE 2] Oven does not operate at all; Display window does not indicate any figures and no program of any pads will be accepted.

1. 8A fuse has been blown.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of short switch with door closed	Continuity	Malfunction of short switch	Replace
Check continuity of safety switch B's contacts with door opened	Continuity	Shorted contacts of safety switch B	Replace
Disconnect one side of lead wire connected from high voltage transformer to the high voltage capacitor and operate the unit.	Normal	Defective high voltage capacitor	Replace
	8A fuse again blows	Defective high voltage transformer	Replace

CHECK	RESULT	CAUSE	REMEDY

2. Outlet has proper voltage. 8A Fuse is not open.

Check continuity of thermal cutouts (oven and magnetron)	No continuity	Defective thermal cutout	Replace
Check continuity of power supply cord	No continuity	Open power supply cord	Replace
Disconnect lead wire of L.V.Transformer primary side (CN1B) and check the continuity	Infinity	Open winding of low voltage transformer	Replace
	Approx. 160~200Ω (Normal) (NE-972) Approx. 40~60Ω (Normal) (NE-992/993)	Defective DPC	Replace or repair D.P.C.
Check 1.25A/FUSE 3 for NE-992/993 (630mA/FUSE 3 for NE-972) on mini P.C.B.	fuse open	Defective D.P.C.	Replace or repair D.P.C.

[TROUBLE 3] No microwave oscillation even though fan motor rotates.

CHECK	RESULT	CAUSE	REMEDY
1. Check if 240 V AC is applied to the primary side of high voltage transformer	Yes, 240 V is applied	Please proceed to troubleshooting number 2 of this TROUBLE	
	No		
Check DC voltage being supplied to power relay 5 coil (NOTE 2) (See **Fig. 28A & 28B**)	0 volts	Defective digital programmer circuit	Replace or repair D.P.C.
	Normal	Faulty contacts of power relay 5 or open relay coil	Replace

NOTE 2: Connect DC volt meter between terminals 5 and 6 of power relay 5. (See **Fig. 28A & 28B**)
Set power at High and set any time.
Normal digital programmer circuit should read approx. 18V DC continuously.

CAUTION

A 240V AC is present at the shaded area ▨ of the digital programmer circuit (Terminals of power relays 2, 3, 5, 6, 7 and Triac etc.).
When troubleshooting, be cautious of possible electrical shock hazard.

NE-972

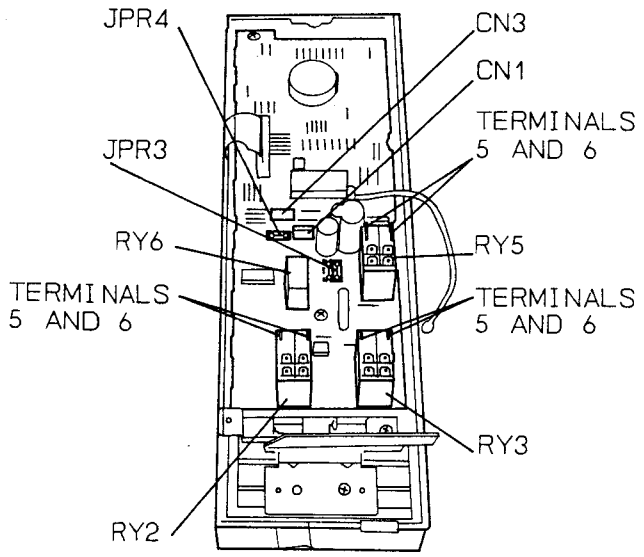


Fig. 28A

NE-992/NE-993

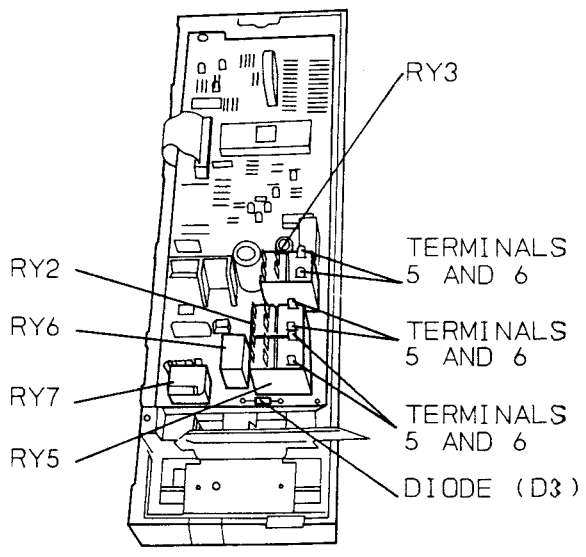


Fig. 28B

CHECK	RESULT	CAUSE	REMEDY

2. 240V AC is applied to primary side of high voltage transformer.

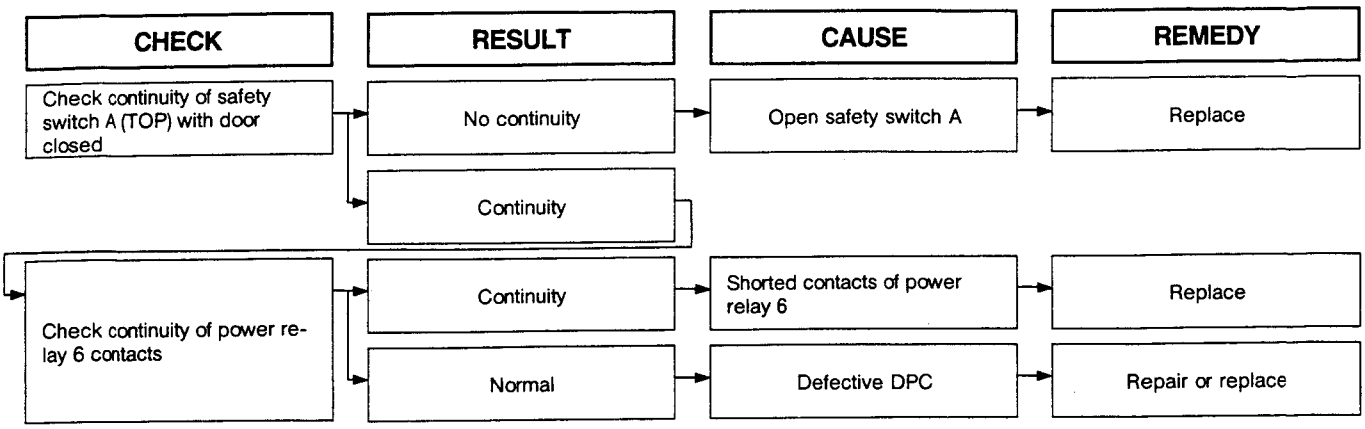
CHECK	RESULT	CAUSE	REMEDY
Disconnect one lead wire connected to filament terminal of magnetron and check the continuity of magnetron's filament	No continuity	Defective magnetron	Replace
Check the 0.5A fuse between H.V.Capacitor and magnetron	0.5A fuse open		
Disconnect both 2 lead wires connected to filament terminals of magnetron and check the continuity between filament and magnetron case	Continuity	Shorted filament with anode of magnetron	Replace magnetron
Check the 0.5A fuse with diode	0.5A fuse open		Replace diode assy with 0.5A fuse **NOTE:**
Check the continuity of the high voltage transformer primary winding (0—240V)	No continuity	Open winding of the high voltage transformer	Replace
Check the insulation of filament winding of high voltage transformer	Poor insulation	Defective high voltage transformer	Replace
Check the continuity of filament winding of H.V.Transformer	No continuity	Defective H.V.Transformer	Replace
	Normal	Aging change of magnetron	Replace magnetron

NOTE: 0.5A fuse will be open when diode is shorted in order to prevent from overheating of H.V. Transformer. Therefore, in this case, diode may be possibly shortcircuited.

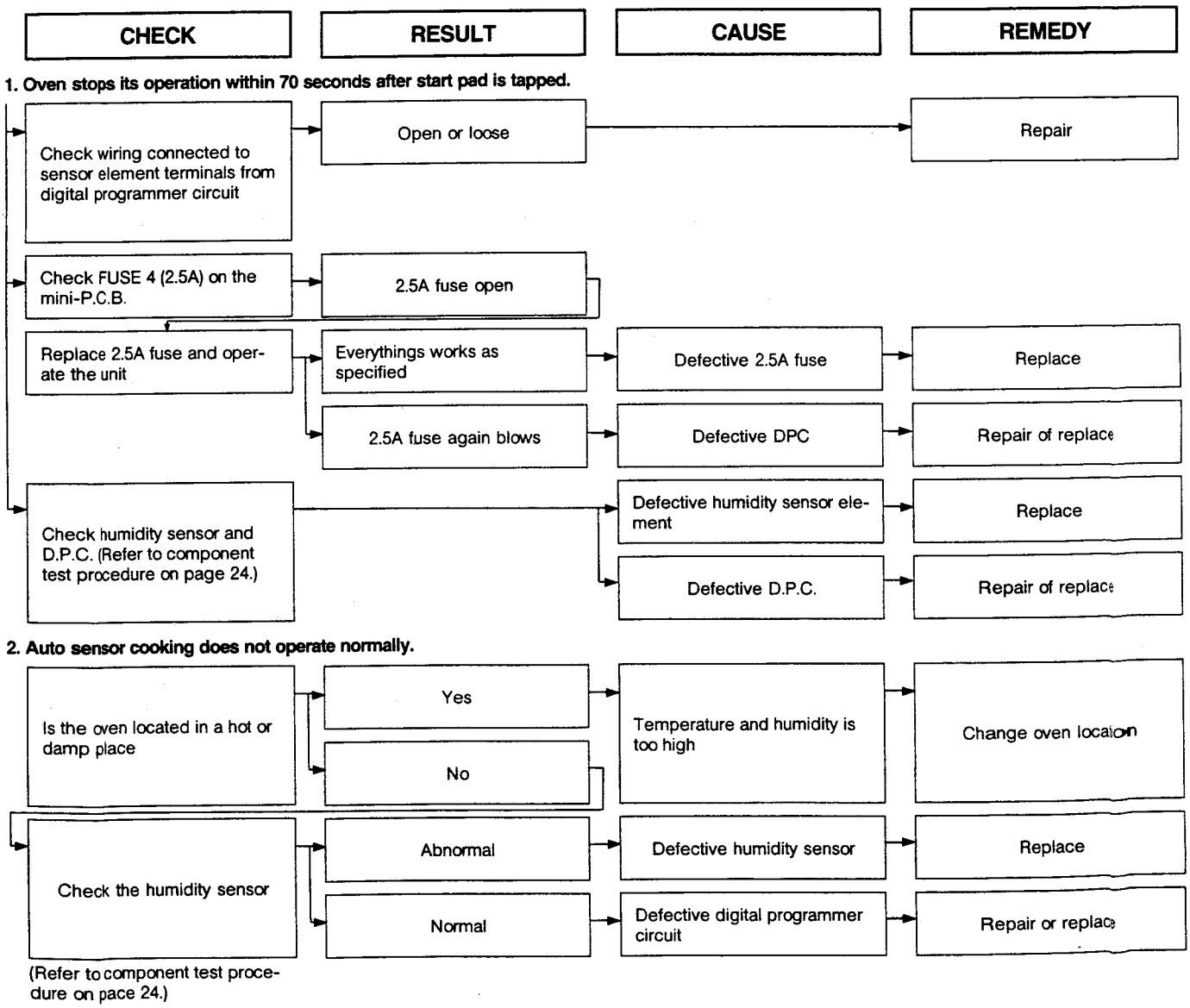
【TROUBLE 4】 Microwave output power is low. First of all, check if output is really low by following "Measurement of microwave output" on page 25.

CHECK	RESULT	CAUSE	REMEDY
Check the power source voltage with magnetron oscillating.	Lower than 220 volts (in the 240 volts area)	Decrease in power source voltage	Inform customer of required power voltage
	Normal		
Check the timing periods of the 18V DC being applied to the power relay 5 coil (Refer to page 10 for the timing periods of the power relay 5)	Abnormal	Defective digital programmer circuit	Replace
	Normal	Aging change of magnetron	Replace depending on the result of output test

[TROUBLE 5] Oven lamp and turntable turn on when power supply cord is plugged into wall receptacle.



[TROUBLE 6] Microwave oven does not operate normally, when auto sensor cooking is selected. (For NE-992/NE-993 only)


CHECK
RESULT
CAUSE
REMEDY
1. Oven stops its operation within 70 seconds after start pad is tapped.
Check wiring connected to sensor element terminals from digital programmer circuit
Open or loose
Repair
Check FUSE 4 (2.5A) on the mini-P.C.B.
2.5A fuse open
Replace 2.5A fuse and operate the unit
Everythings works as specified
Defective 2.5A fuse
Replace
2.5A fuse again blows
Defective DPC
Repair of replace
Check humidity sensor and D.P.C. (Refer to component test procedure on page 24.)
Defective humidity sensor element
Replace
Defective D.P.C.
Repair of replace
2. Auto sensor cooking does not operate normally.
Is the oven located in a hot or damp place
Yes
Temperature and humidity is too high
Change oven location
No
Check the humidity sensor
Abnormal
Defective humidity sensor
Replace
Normal
Defective digital programmer circuit
Repair or replace
(Refer to component test procedure on pace 24.)

[TROUBLE 7] Magnetron oscillates for 1~5 minutes after start pad is tapped, then stops all functions of the oven. (oven lamp, fan motor and turntable motor do not turn on.)

REASON: During first 1~5 minutes, magnetron is oscillates but the fan motor does not rotate, this causing the magnetron to heat up and open the magnetron thermal cutout.

WARNING

A high voltage is generated in the secondary winding of the high voltage transformer and also high voltage circuit, even though fan motor does not rotate. Be very cautious for high voltage when troubleshooting.

CHECK	RESULT	CAUSE	REMEDY
Check DC voltage being applied to power relay 6 coil (NOTE 3)	Approx. 18V DC	Faulty contacts of power relay 6 or open relay coil	Replace power relay 6 (on the D.P.C.)
	0V	Defective DPC	Repair or replace

NOTE 3: Follow the test procedures below.
(1) Unplug the oven power cord.
(2) Disconnect 2 lead wires connected to the high voltage transformer primary side, and isolate them.
(3) For NE-992/NE-993 - Connect DC volt meter between D3 (Diode) terminals on the DPC, because D3 is connected to coil terminals of power relay 6. (See **Fig. 28B**)
(4) For NE-972 - Connect DC volt meter between jumper lead wire JPR3 and JPR4 on the DPC because JPR3 and JPR4 are connected to coil terminals of RY6. (See **Fig. 28A**)
(5) Plug in the oven power cord.
(6) Check DC voltage being applied to power relay 6 coil with door opened.

[TROUBLE 8] Magnetron oscillates for 1~5 minutes after power supply cord is plugged into wall receptacle, then stops all functions of the oven. Then about 10~50 minutes later, magnetron oscillates again. (Oven lamp, fan motor and turntable motor do not turn on.)

REASON: During first 1~5 minutes, magnetron is oscillates but the fan motor does not rotate, this causing the magnetron to heat up and open the magnetron thermal cutout.

WARNING

A high voltage is generated in the secondary winding of the high voltage transformer and also high voltage circuit, even though fan motor does not rotate. Be very cautious for high voltage when troubleshooting.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of power relay 5 contacts	Continuity	Shorted contacts of power relay 5	Replace
	No continuity	Defective DPC	Repair or replace

[TROUBLE 9] Turntable motor turns on when door is opened.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of safety switch A (TOP) with door opened	Continuity	Shorted contacts of safety switch A	Replace

[TROUBLE 10] Microwave cooking program works normally, but convection cooking and/or grill cooking programs do not.

NOTE: Refer to cooking pattern of convection cooking (**Fig. 4**) and/or grill cooking (**Fig. 5**)

1. Convection heater does not heat at all.

CHECK	RESULT	CAUSE	REMEDY
Disconnect 2 lead wires from convection heater terminals and check continuity of the heater	No continuity	Open heater	Replace
	Approx. 46Ω (Normal)		
Check DC voltage being applied to power relay 3 coil (terminals 5 and 6) (See **Fig. 28A & 28B**)	Approx. 18V DC	Faulty contacts of power relay 3 or open relay coil	Replace
	0V	Defective D.P.C.	Repair or replace

2. Grill heater does not heat at all.

CHECK	RESULT	CAUSE	REMEDY
Disconnect 2 lead wires from grill heater terminals and check continuity of the heater	No continuity	Open heater	Replace
	Approx. 37Ω (Normal)		
Check DC voltage being applied to power relay 2 coil (terminals 5 and 6) (See **Fig. 28A & 28B**)	Approx. 18V DC	Faulty contacts of power relay 2 or open relay coil	Replace
	0V	Defective D.P.C.	Repair or replace

[TROUBLE 11] Combination cooking is not working in correct order

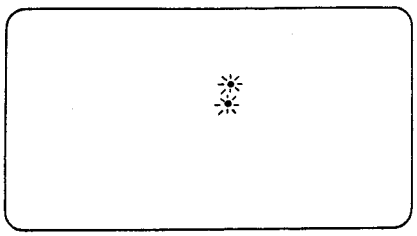
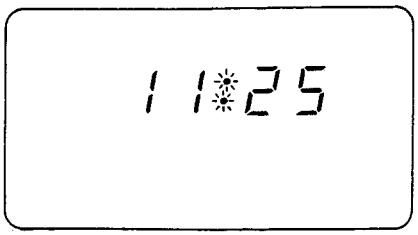
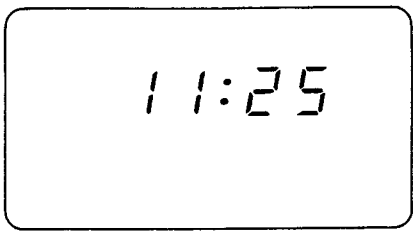
CHECK	RESULT	CAUSE	REMEDY
Check timing period of DC voltage being applied to power relay 2, 3 and 5 (Refer to the description of combination cooking and **Fig. 6B** on page 14.	Abnormal	Defective DPC	Repair or replace

[TROUBLE 12] "FF FF" appears in display window when convection, grill or combination cooking.

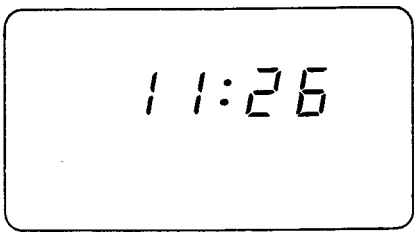
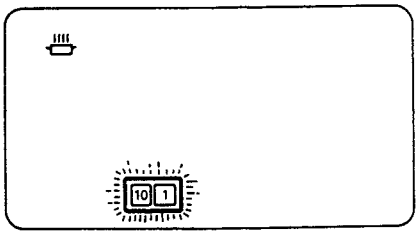
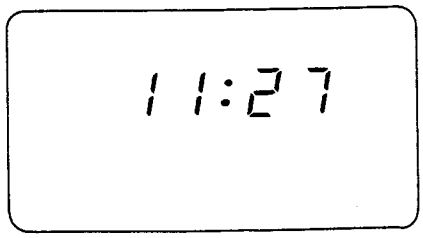
CHECK	RESULT	CAUSE	REMEDY
Check continuity of oven temp sensor with CN3 connector unplugged.	0Ω or infinity	Short or open oven temp sensor	Replace
	loose connection of CN3		Repair
	Normal	Defective DPC	Repair or replace

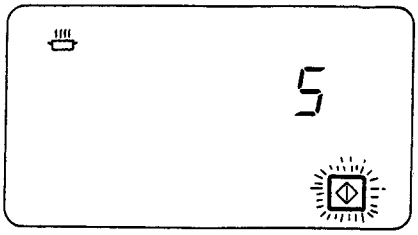
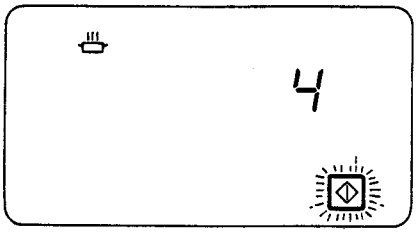
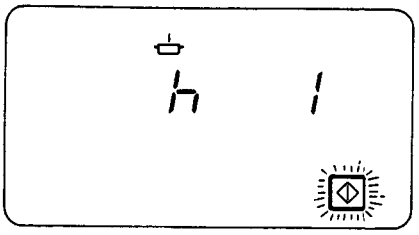
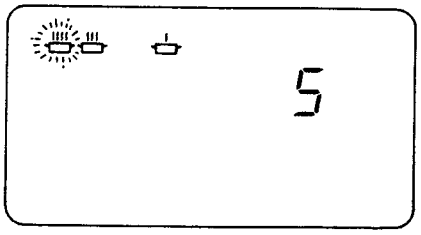
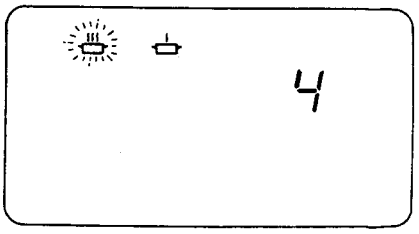
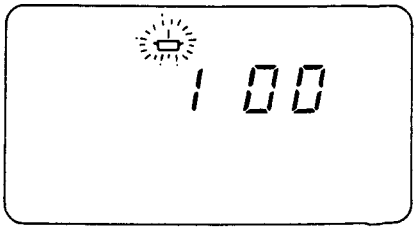
DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE (FOR NE-992, NE-993)

1. Clock Setting

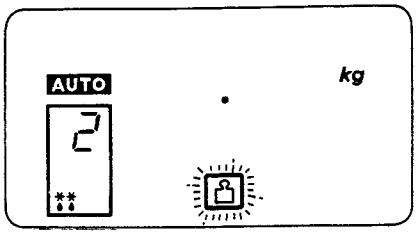
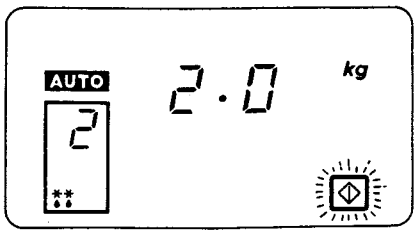
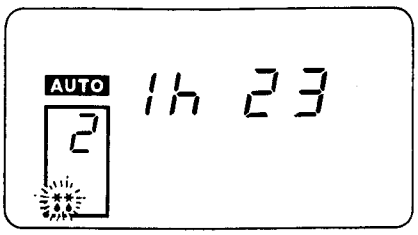
STEP	OPERATION	FUNCTION	DISPLAY
1	Plug the power supply cable into wall receptacle.	• Colon starts blinking.	
2	Enter time of day (TOD) by tapping appropriate number pads. Example : To Set 11:25 • Tap 10 min pad once • Tap 1 min pad once • Tap 10 sec pad twice • Tap 1 sec pad 5 times	• Numbers tapped are displayed in the display window. • Colon keeps blinking.	
3	Tap Clock Pad.	• Colon stops blinking and stays on. • TOD has now been registered into the digital programmer circuit and will count up by minutes.	

2. Time Cooking/Three Stage Cooking

STEP	OPERATION	FUNCTION	DISPLAY
1	Place a water load in the oven and close the door.		
2	Tap Power Pad. (Example: Tap power select pad once for high power setting.)	• Clock time disappears. • "HIGH" ( ) power indicator light turns on. • Time pad indicator light [10][1] begins to blink.	
3	Tap Stop/Cancel Pad.	• The display window will show TOD again.	

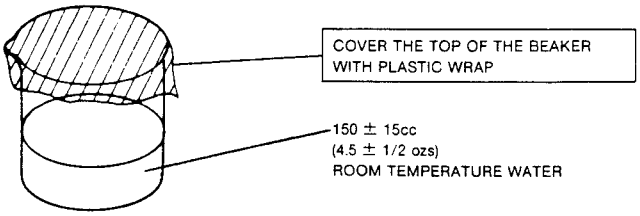
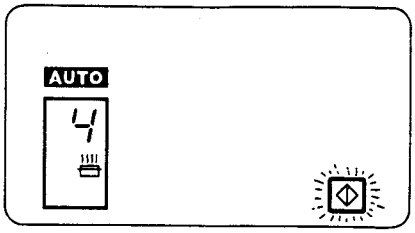
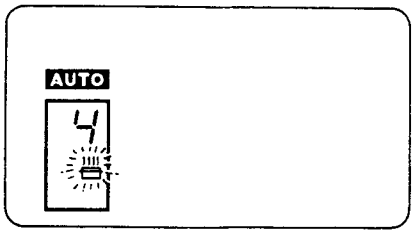
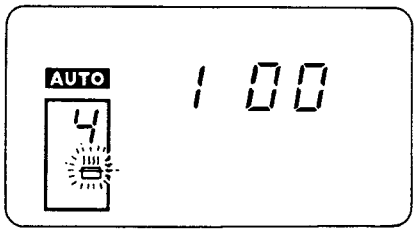
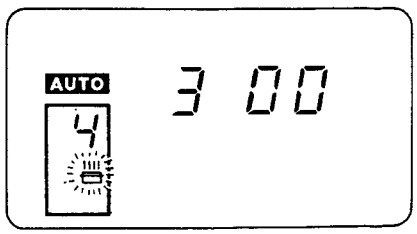
STEP	OPERATION	FUNCTION	DISPLAY
4	Select "HIGH" ( ) power and set for 5 seconds by tapping the appropriate pads. (1st stage)	• Clock time disappears. • "HIGH" ( ) Power indicator light turns on. • Display window shows "5". • Start Pad indicator light blinks.	
5	Set MEDIUM ( ) power for 4 seconds. (2nd stage)	• First stage cooking time "5" and "HIGH" ( ) power indicator light disappear. • "MEDIUM" ( ) power indicator light turns on. • Display window shows "4". • Start Pad indicator light blinks.	
6	Set SIMMER ( ) power for 1 minute. (3rd stage)	• Second stage cooking time "4" and "MED" ( ) power indicator light disappear. • "SIMMER" ( ) power indicator light turns on. • Display window shows "h 1". **NOTE: When SIMMER power is selected, h meaning hour appears in display window and cooking time is shown in hours and minutes.** • Start Pad indicator light blinks.	
7	Tap Start Pad. (1st stage)	• Oven light turns on. • Microwave activity starts. • Third stage cooking time disappears. • SIMMER power indicator light stays on. • HIGH and MEDIUM power indicator lights turn on. • Turntable begins to rotate. • First stage cooking time "5" appears and counts down by seconds. • "HIGH" (1st stage) power indicator light begins to blink.	
8	(2nd stage)	• After completing 1st stage program, oven automatically switches to 2nd stage. • HIGH (1st stage) power indicator light turns off. • MEDIUM (2nd stage) power indicator light starts to blink. • SIMMER (3rd stage) power indicator light remains on. • Display window indicates "4" and starts counting down by seconds.	
9	(3rd stage)	• After completing 2nd stage program, oven automatically switches to 3rd stage. • MEDIUM (2nd stage) power indicator light turns off. • SIMMER (3rd stage) power indicator light starts to blink. • Display indicates "1 00" and starts counting down by seconds.	
10	When third stage cooking ends, oven beeps five times and shuts off automatically.		• TOD appears in display window.

3. Auto Weight Defrost (**)

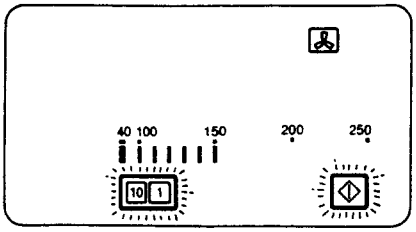
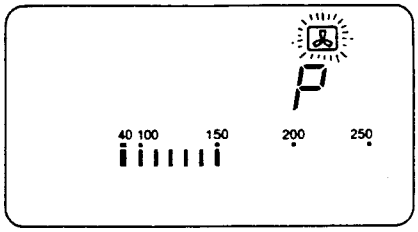
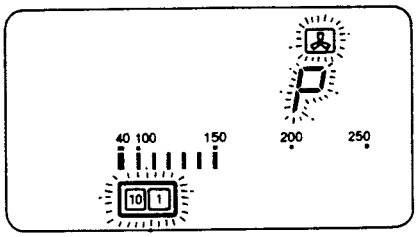
STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Defrost Pad 2 times to select Defrost Category 2.	• Clock time disappears. • Category number "2" appears in the display window. • Auto Weight Defrost indicator light turns on. • kg or lb. oz indicator turns on. • Weight Pad indicator starts to blink.	
2	Set the weight to 2kg by tapping 1kg pad twice.	• Weight Pad indicator disappears and the weight selected appears in the display window. • Start Pad indicator light blinks.	
3	Tap Start Pad.	• Oven light turns on. • Microwave defrosting begins. • Auto Weight Defrost indicator light begins to blink. • Turntable begins to rotate. • Weight in display window disappears. • Defrosting time "1h 23" appears and counts down.	
4	Tap Stop/Cancel Pad twice.	• Oven shuts off. • The display window will show TOD again.	

4. Auto Sensor Cooking ( ) (For NE-992, NE-993 only)

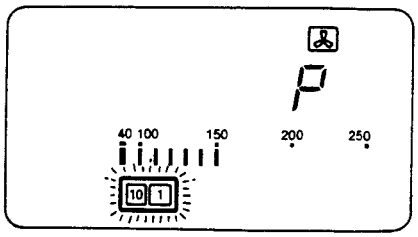
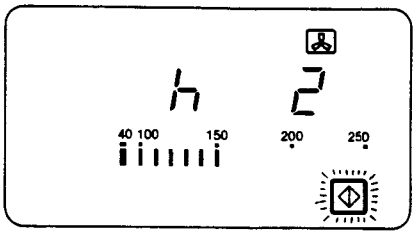
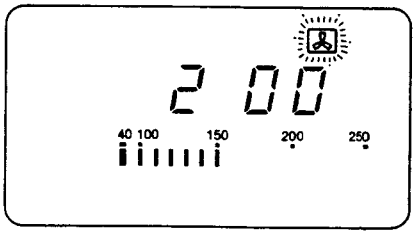
NOTE: Make sure that the outer panel is installed before Auto Sensor Cooking Test, since Auto Sensor function does not operate properly without the outer panel.

STEP	OPERATION	FUNCTION	DISPLAY
1	Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperature water in a beaker, securely cover the top of the beaker with plastic wrap and place the beaker in the center of the oven.		
2	Tap Auto Sensor "Cook" Pad ( ) 2 times.	• Clock time disappears. • "4" appears in display window. • "Auto Sensor Cook" ind. light ( ) turns on. • Start Pad indicator light ( ) blinks.	
3	Tap Start Pad.	• "Auto Sensor Cook" ind. light ( ) starts to blink. • Oven lamp turns on. • Fan motor and turntable start rotating. • Oven lamp will dim a little, about 60 seconds after Start Pad is tapped. This indicates that magnetron has started oscillation.	
	The humidity sensor detects steam about 2 to 4 minutes after the Start Pad is tapped. Auto Sensor Cooking (T1) automatically switches to time cooking (T2). Category number "4" stays on, two beeps sound and the remainder of cooking time appears in display window. NOTE: Cooking time will vary depending on the water temperature, the shape of beaker or the power source voltage.	• Auto Sensor Cooking automatically switches to time cooking. • Category number "4" stays on, two beeps sound, and 1 00 to 3 00 (1 minute to 3 minutes) appears in the display window as balance of cooking time.	  NOTE: If 1 00 to 3 00 (1 min to 3 min) appears, AUTO SENSOR FUNCTION is normal.
		• When the balance of cooking time has elapsed, oven stops and beeps five times. • "Auto Sensor Cooking" ind. light and oven lamp turn off. • TOD reappears in the display window. • Finally check to make sure if TOD is correct.	
NOTE: When the Auto Sensor Category Pad is tapped while the oven is hot, "H" sign meaning hot will appear in the display window. This is normal. Allow the oven to be cooled until "H" sign disappears. To cool the oven quickly, touch the Start Pad, then cooling fan will turn on, but no microwaves will be generated.			

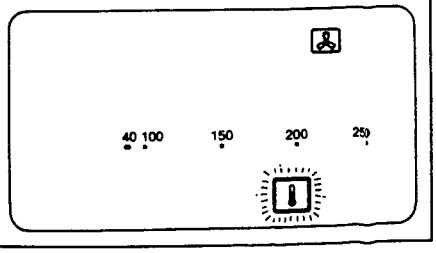
5. Convection Cooking (Preheating) ( )

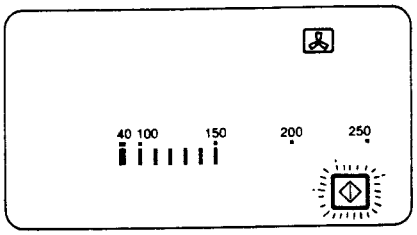
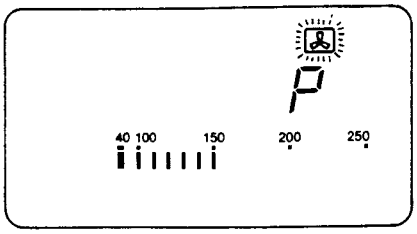
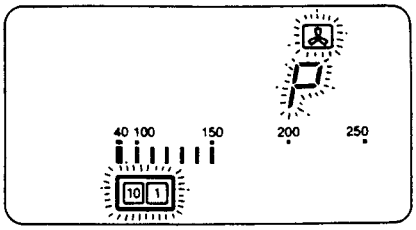
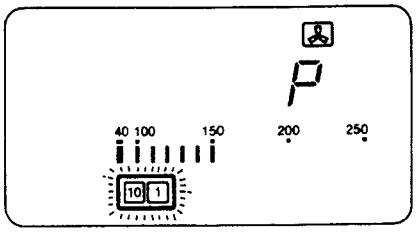
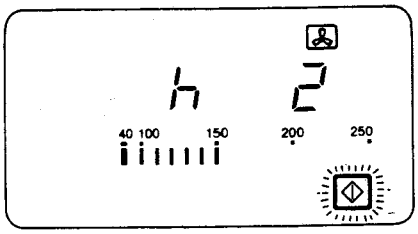
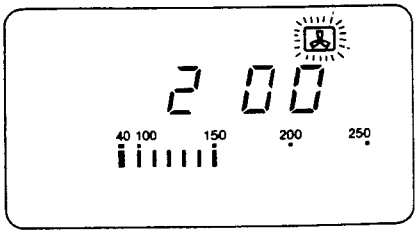
STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white glass ceramic tray in the oven.		
2	Tap Temperature Pad, or , to set cooking temperature from 40℃ up to 250℃. Set to 150℃.	• Clock time disappears. • Convection indicator light turns on. • Cooking temperature will be shown in temperature bar indicator. • Time Pad indicator light and Start Pad indicator light begin to blink.	
3	Tap Start Pad.	• Pre-heat indicator light "P" turns on. • Oven lamp turns on. • Turntable begins to rotate. • Convection indicator light blinks and desired cooking temperature remains on. • Actual oven temperature begins to blink.	
		• When preheating is completed, oven beeps three times. • Time Pad indicator light, Convection indicator and Pre-heat indicator start blinking. • Oven lamp stays on and turntable continues to rotate.	
4	Proceed to paragraph 6.		

6. Convection Cooking (Time cooking) ( )

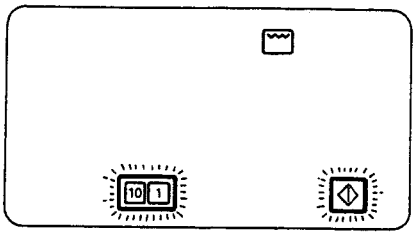
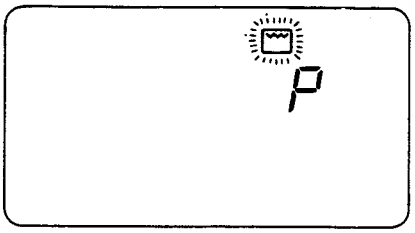
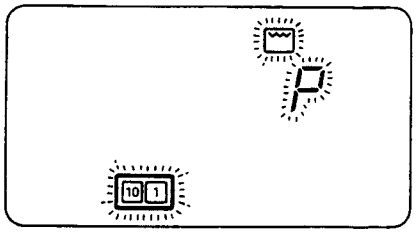
STEP	OPERATION	FUNCTION	DISPLAY
1	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • Time Pad indicator light starts blinking. • Convection indicator and Pre-heat indicator stay on.	
2	Close the door and set Convection cooking time for 2 min.	• Convection cooking time "h 2" appears in the display window. • Convection indicator light remains on, and Start Pad indicator light begins blinking.	
3	Tap Start Pad.	• Oven lamp turns on. • Turntable begins to rotate. • Convection cooking begins. • Convection cooking time begins to count down. • Convection indicator light starts to blink.	
		• When convection cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Convection indicator light turns off. • T.O.D. appears in the display window.	

7. Convection Cooking with Double Shelves ( )

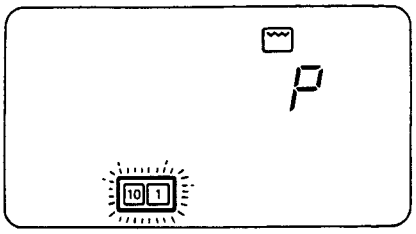
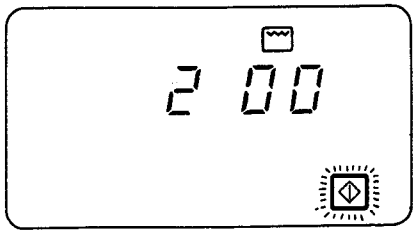
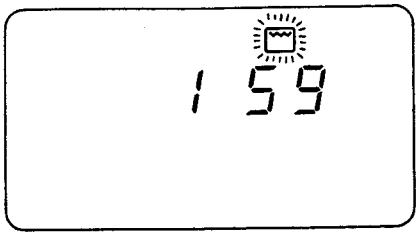
STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white glass ceramic tray in the oven.		
2	Tap Double Shelf Pad.	• Clock time disappears. • Convection indicator light turns on. • Temperature indicator light begins to blink.	

STEP	OPERATION	FUNCTION	DISPLAY
3	Tap Temperature Pad, [Temp ↓] or [Temp ↑], to set Pre-heat temperature, for Double Shelf Cooking. Set to 150℃.	• Desired oven temperature will be shown, in temperature bar indicator. • Start Pad indicator light [◇] begins to blink.	
4	Tap Start Pad.	• Oven lamp turns on. • Turntable begins to rotate. • Convection indicator light starts to blink. • Pre-heat indicator light "P" turns on. • Actual oven temperature begins to blink.	
		• When preheating is completed, oven beeps three times. • Fan motor begins to rotate. • Convection indicator and Pre-heat indicator start blinking. • Pre-heat temperature indicator will blink in temperature bar indicator. • Oven lamp stays on and turntable continues to rotate. • Time Pad indicator light starts blinking.	
5	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • Temperature indicator continues to blink in temperature bar indicator. • Convection indicator and Pre-heat indicator stay on. • Time Pad indicator light continues to blink.	
6	Close the door and set Convection cooking time for 2 min.	• Convection cooking time "h 2" appears in the display window. • Convection indicator light remains on, and Start Pad indicator light [◇] begins blinking.	
7	Tap Start Pad.	• Oven lamp turns on. • Turntable begins to rotate. • Convection cooking begins. • Convection cooking time begins to count down. • Convection indicator light starts to blink.	
		• When convection cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Convection indicator light turns off. • T.O.D. appears in the display window.	

8. Grill Cooking (Preheating) ( )

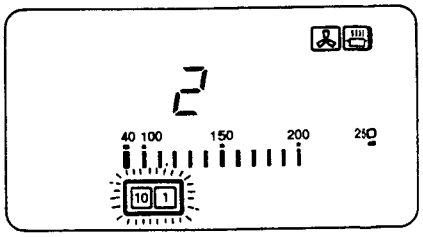
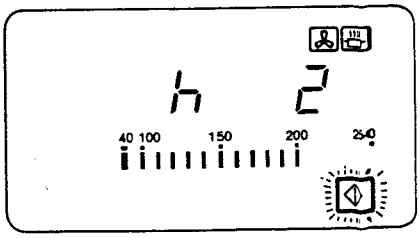
STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white glass ceramic tray in the oven.		
2	Tap Grill Pad.	• Clock time disappears. • Grill indicator light turns on. • Time Pad indicator light and Start Pad indicator light begin to blink.	
3	Tap Start Pad.	• Pre-heat indicator light "P" turns on. • Grill indicator light begins to blink. • Oven lamp turns on. • Turntable begins to rotate.	
		• When Pre-heat is completed, oven beep three times. • Grill indicator light, Pre-heat indicator light and Time Pad indicator light start blinking. • Oven lamp stays on and turntable continues to rotate.	
4	Proceed to paragraph 9.		

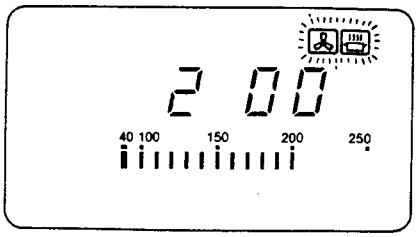
9. Grill Cooking (Time Cooking) ( )

STEP	OPERATION	FUNCTION	DISPLAY
1	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • Time Pad indicator light remains blinking. • Grill indicator light and Pre-heat indicator light stay on.	
2	Close the door and set Grill cooking time for 2 min.	• Pre-heat indicator light disappears. • Grill indicator light remains on. • Grill cooking time "2 00" appears in display window. • Start Pad indicator light starts to blink.	
3	Tap Start Pad.	• Grill cooking begins. • Turntable rotates. • Oven lamp turns on. • Grill indicator light begins to alternately blink and glow. • Grill time counts down second by second.	
		• When Grill cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Grill indicator light turns off. • T.O.D. appears in the display window.	

10. Combination Cooking ( )

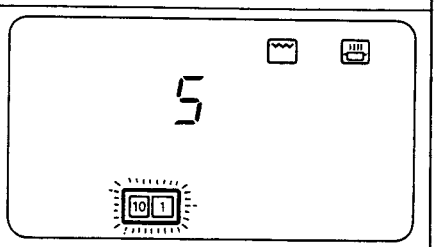
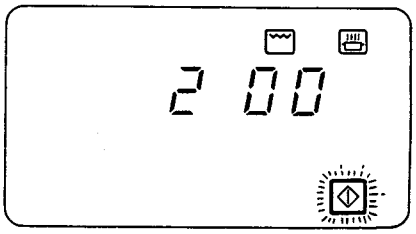
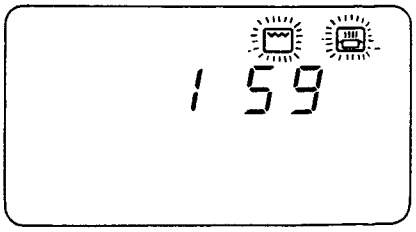
(1. Microwave & Convection Combination — Category 1, 2, 3, 4)

STEP	OPERATION	FUNCTION	DISPLAY
1	• Pour adequate water in a oven glassware or ceramic utensil and place the utensil on the white glass ceramic tray in the oven. • Tap combination pad twice.	• Clock time disappears. • Microwave power indicator light and Convection indicator light turn on. • Category number "2" appears in the display window. • Cooking temperature will be shown for 200℃ in temperature bar indicator. • Time Pad indicator light begins to blink.	
2	Set cooking time for 2 min.	• Desired oven temperature remains on. • Category number "2" disappears and Combination Cooking time "h 2" appears in the display window. • Microwave power indicator light and Convection indicator light remain on. • Start Pad indicator light starts blinking.	

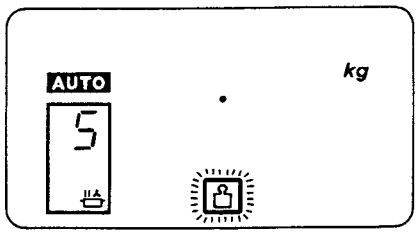
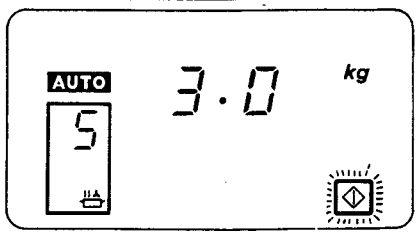
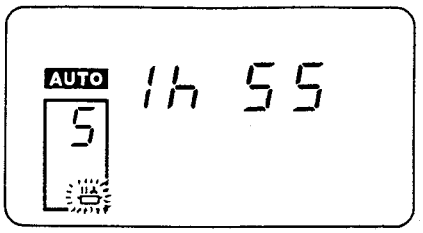
STEP	OPERATION	FUNCTION	DISPLAY
3	Tap Start Pad.	• Combination cooking begins. • Oven lamp turns on. • Turntable begins to rotate. • Combination cooking time starts counting down. • Microwave power indicator light and Convection indicator light start blinking. • Temperature bar indicator starts blinking when the oven temperature reaches the 40℃.	
		• When combination cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Oven lamp and indicator light turn off. • T.O.D. appears in display window.	

11. Combination Cooking ( )

(2. Microwave & Grill Combination—Category 5, 6)

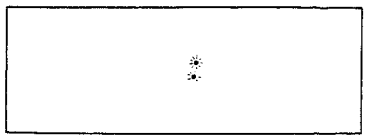
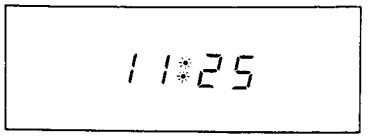
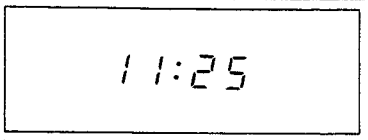
STEP	OPERATION	FUNCTION	DISPLAY
1	• Pour adequate water in a oven glassware or ceramic utensil and place the utensil on the white glass ceramic tray in the oven. • Tap combination pad 5 times.	• Clock time disappears. • Microwave power indicator light and Grill indicator light turn on. • Category number "5" appears in the display window. • Time Pad indicator light begins to blink.	
2	Set cooking time for 2 min.	• Category number "5" disappears and Combination Cooking time "2 00" appears in the display window. • Microwave power indicator light and Grill indicator light remain on. • Start Pad indicator light starts blinking.	
3	Tap Start Pad.	• Combination cooking begins. • Oven lamp turns on. • Turntable begins to rotate. • Combination cooking time starts counting down. • Microwave power indicator light and Grill indicator light start blinking.	
		• When combination cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Oven lamp and indicator light turn off. • T.O.D. appears in display window.	

12. Auto Weight Combination ( )

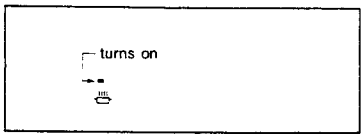
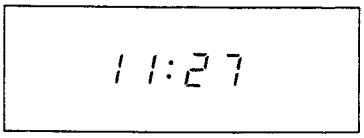
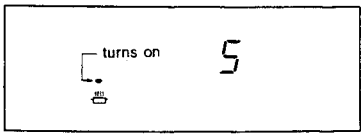
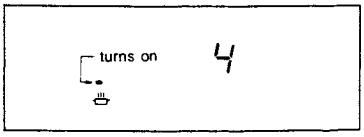
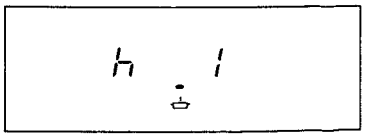
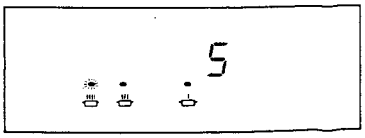
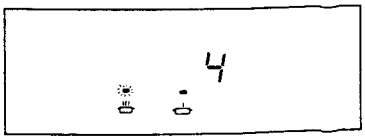
STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Combination Category Pad 5 times to select Cook Category 5.	• Clock time disappears. • Category number "5" appears in the display window. • Auto Weight Combination indicator light turns on. • kg or lb. oz indicator turns on. • Weight Pad indicator starts to blink.	
2	• Select the correct indicator between kg and lb. oz by taping kg/lb convert pad. • Set the weight to 3kg by tapping 1kg pad three times.	• Category number remains on. • Selected weight "3.0" appears in the display window. • Start Pad indicator light begins to blink.	
3	Tap Start Pad.	• Auto Weight Combination Cooking begins. NOTE: **Refer to cooking pattern of "Microwave & Convection Combination/Fig. 6B." for Auto Weight Combination Cooking because they are same pattern.** • Selected weight "3.0kg" disappears and Combination Cooking time "1h 55" appears and starts counting down. • Auto Weight Combination Cooking indicator light begins blinking. • Oven lamp turns on. • Turntable begins to rotate.	
4	Tap Stop/Cancel Pad twice.	• Oven shuts off. • The display window will show TOD again.	

DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE (For NE-972)

1. Clock Setting

STEP	OPERATION	FUNCTION	DISPLAY
1	Plug the power supply cable into wall receptacle.	• Colon starts blinking.	
2	Enter time of day (TOD) by tapping appropriate number pads. Example : To Set 11 : 25 • Tap 10 min pad once • Tap 1 min pad once • Tap 10 sec pad twice • Tap 1 sec pad 5 times	• Numbers tapped are displayed in the display window. • Colon keeps blinking.	
3	Tap Clock Pad.	• Colon stops blinking and stays on. • TOD has now been registered into the digital programmer circuit and will count up by minutes.	

2. Time Cooking/Three Stage Cooking

STEP	OPERATION	FUNCTION	DISPLAY
1	Place a water load in the oven.		
2	Tap Power Pad.(Example : Tap power select pad once for high power setting.)	• Clock time disappears. • "HIGH" ( ) power indicator light turns on.	
3	Tap Stop/Cancel Pad.	• The display window will show TOD again.	
4	Select "HIGH" ( ) power and set for 5 seconds by tapping the appropriate pads. (1st stage)	• Clock time disappears. • "HIGH" ( ) Power indicator light turns on. • Display window shows "5".	
5	Set MEDIUM ( ) power for 4 seconds. (2nd stage)	• First stage cooking time "5" and "HIGH" ( ) power indicator light disappear. • "MEDIUM" ( ) power indicator light turns on. • Display window shows "4".	
6	Set SIMMER ( ) power for 1 minute. (3rd stage)	• Second stage cooking time "4" and "MED" ( ) power indicator light disappear. • "SIMMER" ( ) power indicator light turns on. • Display window shows "h 1". **NOTE: When SIMMER power is selected, h meaning hour appears in display window and cooking time is shown in hours and minutes.**	
7	Tap Start Pad. (1st stage)	• Oven light turns on. • Microwave activity starts. • Third stage cooking time disappears. • SIMMER power indicator light stays on. • HIGH and MEDIUM power indicator lights turn on. • Turntable begins to rotate. • First stage cooking time "5" appears and counts down by seconds. • "HIGH" (1st stage) power indicator light begins to blink.	
8	(2nd stage)	• After completing 1st stage program, oven automatically switches to 2nd stage. • HIGH (1st stage) power indicator light turns off. • MEDIUM (2nd stage) power indicator light starts to blink. • SIMMER (3rd stage) power indicator light remains on. • Display window indicates "4" and starts counting down by seconds.	

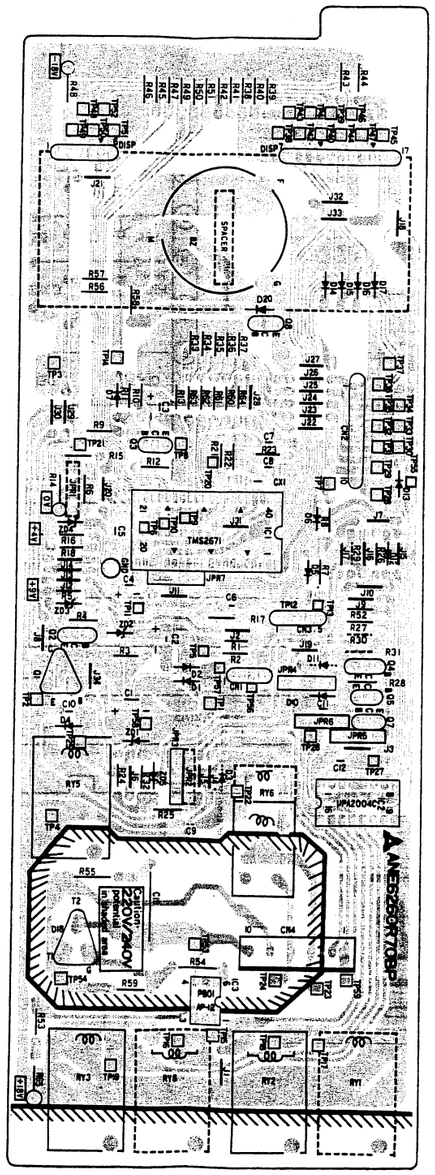
NE-972, NE-973 DIGITAL PROGRAMMER CIRCUIT

RY1	Main
RY2	Grill Heater
RY3	Convection Heater
RY5	Variable Power Control
RY6	Inrush Reducing
RY8	Main
D18 TRIAC	Fan Motor

(R7/GP)

NOTE: WAVEFORMS SHOWN IN THIS SCHEMATIC DIAGRAM INDICATE OVEN IN OPERATING MODE WITH POWER SELECT CONTROL SET AT HIGH POWER.

Digital Programmer Circuit Parts List



MISCELLANEOUS

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
DISP	ANE6456X80BP	Fluorescent Tube	1	
SPACER	ANE6238X00AP	Spacer Cushion	1	For DISP
CN1	AEEMB04BEHA	4 pin connector	1	
CN2	AEEMWD0810	10 pin connector	1	
CN3	AEEMB05PSHF3	5 pin connector	1	
CN4	AEEMW-P14101	10 pin connector	1	
RY1,2,3,5, 8	AEAWG4W1T18B	Power Relay	5	DC18V
RY6	AEAWAJR39069	Power Relay	1	DC18V
BZ	AEFBPKM37201	Buzzer	1	2kHz
CX1	AEFFCSB500E	Ceramic Resonator	1	500kHz
	ANET00X-E60	D.P.C. Parts Box	1	

CAPACITORS

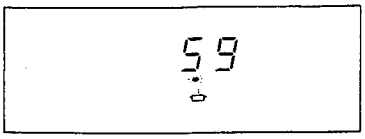
Ref. No.	Part No.	Description	Pcs/ Set	Remarks
C1	ECEA1VU332E	3300μF ±20% 35V	1	
C2	ECEA1VU221E	220μF ±20% 35V	1	
C3	ECEA1HU2R2E	2.2μF ±20% 50V	1	
C4	ECEA1CU100E	10μF ±20% 16V	1	
C5,6,9,10, 11	ECBT1H103ZF	0.01μF −20%+80% 50V	5	
C7	ECBT1H151KB	150pF ±10% 50V	1	
C8	ECBT1H470JSL	47pF ±5% 50V	1	
C12	ECBT1E104ZF	0.1μF −20%+80% 25V	1	
C15	ECQE2A104MW	0.1μF ±20% 250V AC	1	

SEMICONDUCTORS

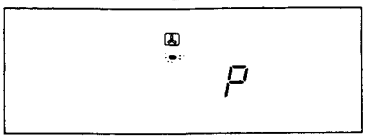
Ref. No.	Part No.	Description	Pcs/ Set	Remarks
IC1	AEIC26795157	L.S.I.	1	M95157 For EPG, SPG, UPG only
IC2	AEICμPA2004C	I.C.	1	μPA2004C
IC3	AEICPB01AP12	I.C.	1	PB01AP-12
Q1	2SD1266-P,Q	Transistor, Si 2W	1	
Q2	2SA720-Q,R,S	Transistor, Si 400mW	1	
Q3	2SB642-P,Q,R	Transistor, Si 400mW	1	
Q4,5	2SD639-Q,R,S	Transistor, Si 600mW	2	
Q7	UN1111	Transistor, Si 400mW	1	
Q8	2SD637-Q,R	Transistor, Si 400mW	1	
D1,2	AEDNERA1202	Diode, Si	2	
D3,4,5,6,7, 10,11,12, 13,14,15, 16,17,20	AEDN1SS53T	Diode, Si	14	
D18	AESMBCR3AM12	Triac	1	
ZD1	AEDZ10EB3T	Zener Diode, Si	1	RD10EB3
ZD2	AEDZ20EB3T	Zener Diode, Si	1	RD20EB3
ZD3	AEDZ3R6EB2T	Zener Diode, Si	1	RD3.6EB2
ZD4	AEDZ5R1EB3T	Zener Diode, Si	1	RD5.1EB3
ZD5	AEDZ9R1EB1T	Zener Diode, Si	1	RD9.1EB1

RESISTORS

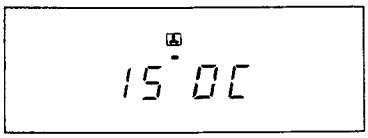
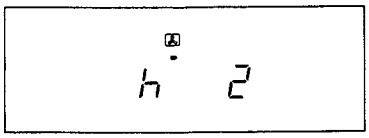
Ref. No.	Part No.	Description	Pcs/ Set	Remarks
R1,2,12	ERD25TJ201T	200Ω ±5% 1/4W	3	
R3,53,65	ERDS1TJ561T	560Ω ±5% 1/2W	3	
R4	ERD25TJ751T	750Ω ±5% 1/4W	1	
R5,7,9,11, 14,15,18, 25,60,61, 62,63,64	ERD25TJ103T	10kΩ ±5% 1/4W	13	
R6	ERD25TJ102T	1.0kΩ ±5% 1/4W	1	
R8,24	ERD25TJ303T	30kΩ ±5% 1/4W	2	
R10	ERD25TJ183T	18kΩ ±5% 1/4W	1	
R13,21	ERD25TJ563T	56kΩ ±5% 1/4W	2	
R16	ERO25TKF2322	23.2kΩ ±1% 1/4W	1	
R17	ERD25TJ914T	910kΩ ±5% 1/4W	1	
R22	ERD25TJ561T	560Ω ±5% 1/4W	1	
R23	ERD25TJ332T	3.3kΩ ±5% 1/4W	1	
R26,29	ERD25TJ432T	4.3kΩ ±5% 1/4W	2	
R27,28,30, 31	ERD25TJ203T	20kΩ ±5% 1/4W	4	
R32,38,39, 40,41,42, 43,44,45, 46,47,48, 49,50,51, 52	ERD25TJ104T	100kΩ ±5% 1/4W	16	
R33,34,35, 36,37	ERD25TJ204T	200kΩ ±5% 1/4W	5	
R54	ERD50TJ101S	100Ω ±5% 1/2W	1	
R55	ERG1SJ101P	100Ω ±5% 1W	1	
R56	ERD25TJ391T	390Ω ±5% 1/4W	1	
R57	ERD25TJ154T	150kΩ ±5% 1/4W	1	
R58	ERD25TJ392T	3.9kΩ ±5% 1/4W	1	
R59	ERD25TJ331T	330Ω ±5% 1/4W	1	

STEP	OPERATION	FUNCTION	DISPLAY
9	(3rd stage)	• After completing 2nd stage program, oven automatically switches to 3rd stage. • MEDIUM (2nd stage) power indicator light turns off. • SIMMER (3rd stage) power indicator light starts to blink. • Display indicates "1 00" and starts counting down by seconds.	 
10	When third stage cooking ends, oven beeps five times and shuts off automatically.		• TOD appears in display window.

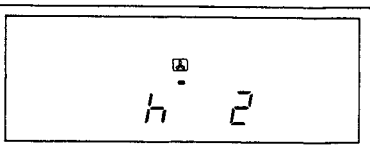
3. Convection Cooking (Preheating)

STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white glass ceramic tray in the oven.		
2	Tap Temperature Pad, [Temp ↑] or [Temp ↓], to set cooking temperature from 40℃ up to 250℃. Set to 150℃.	• Clock time disappears. • Convection indicator light turns on. • "150C" appears in the display window.	
3	Tap Start Pad.	• Cooking temperature disappears. • Pre-heat indicator light "P" turns on. • Oven lamp turns on. • Turntable begins to rotate. • Convection indicator light blinks.	
		• When preheating is completed, oven beeps three times. • Pre-heat indicator disappears. • Cooking temperature will appear and starts to blink. • Oven lamp stays on and turntable continues to rotate.	
4	Proceed to paragraph 4.		

4. Convection Cooking (Time cooking) ([Convection])

STEP	OPERATION	FUNCTION	DISPLAY
1	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • Convection indicator and cooking temperature stop blinking and stay on.	
2	Close the door and set Convection cooking time for 2 min.	• Convection cooking time "h 2" appears in the display window.	
3	Tap Start Pad.	• Oven lamp turns on. • Turntable begins to rotate. • Convection cooking begins. • Convection cooking time begins to count down. • Convection indicator light starts to blink.	
		• When convection cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Convection indicator light turns off. • T.O.D. appears in the display window.	

5. Convection Cooking with Dual Shelves ( )

STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white glass ceramic tray in the oven.		
2	Tap Dual-Shelf Pad. And tap Temperature Pad, to set Pre-heat temperature, for Dual-Shelf cooking. Set to 150℃.	• Clock time disappears. • Convection indicator light turns on. • Desired oven temperature will be shown, in display window.	
3	Tap Start Pad.	• Oven lamp turns on. • Turntable begins to rotate. • Convection indicator light starts to blink. • Pre-heat indicator light "P" turns on.	
		• When preheating is completed, oven beeps three times. • Fan motor begins to rotate. • Pre-heat indicator light "P" disappears. • Pre-heat temperature will turn on and starts to blink. • Oven lamp stays on and turntable continues to rotate.	
4	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • Pre-heat temperature and convection indicator stay on.	
5	Close the door and set Convection cooking time for 2 min.	• Convection cooking time "h 2" appears in the display window. • Convection indicator light remains on.	
6	Tap Start Pad.	• Oven lamp turns on. • Turntable begins to rotate. • Convection cooking begins. • Convection cooking time begins to count down. • Convection indicator light starts to blink.	
		• When convection cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Convection indicator light turns off. • T.O.D. appears in the display window.	

6. Grill Cooking (Preheating)

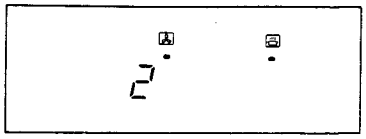
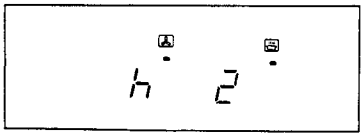
STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white glass ceramic tray in the oven.		
2	Tap Grill Pad.	• Clock time disappears. • Grill indicator light turns on.	
3	Tap Start Pad.	• Pre-heat indicator light "P" turns on. • Grill indicator light starts to blink. • Oven lamp turns on. • Turntable begins to rotate.	P
		• When Pre-heat is completed, oven beep three times. • Pre-heat indicator light starts blinking. • Grill indicator light continues to blink. • Fan motor begins to rotate. • Oven lamp stays on and turntable continues to rotate.	P
4	Proceed to paragraph 7.		

7. Grill Cooking (Time Cooking) ( )

STEP	OPERATION	FUNCTION	DISPLAY
1	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • Grill indicator light and Pre-heat indicator light stay on.	P
2	Close the door and set Grill cooking time for 2 min.	• Pre-heat indicator light disappears. • Grill indicator light remains on. • Grill cooking time "2 00" appears in display window.	2 00
3	Tap Start Pad.	• Grill cooking begins. • Turntable rotates. • Oven lamp turns on. • Grill indicator light begins to alternately blink and glow. • Grill time counts down second by second.	1 59
		• When Grill cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Grill indicator light turns off. • T.O.D. appears in the display window.	

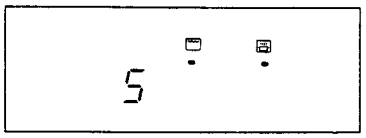
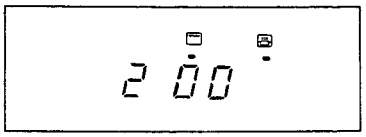
8. Combination Cooking ( )

(1. Microwave & Convection Combination — Category 1, 2, 3, 4)

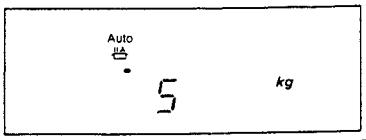
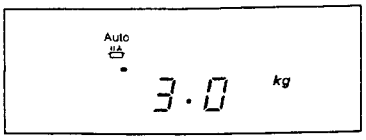
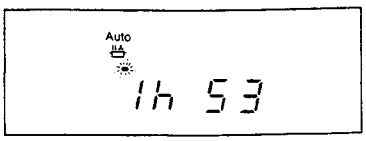
STEP	OPERATION	FUNCTION	DISPLAY
1	• Pour adequate water in a oven glassware or ceramic utensil and place the utensil on the white glass ceramic tray in the oven. • Tap Combination Pad twice.	• Clock time disappears. • Microwave indicator light and Convection indicator light turn on. • Combination category number "2" appears in the display window.	
2	Set cooking time for 2 min.	• Category number "2" disappears and Combination Cooking time "h 2" appears in the display window. • Microwave indicator light and Convection indicator light remain on.	
3	Tap Start Pad.	• Combination cooking begins. • Oven lamp turns on. • Turntable begins to rotate. • Combination cooking time starts counting down. • Microwave indicator light and Convection indicator light start blinking.	
		• When combination cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Oven lamp and indicator light turn off. • T.O.D. appears in display window.	

9. Combination Cooking ( )

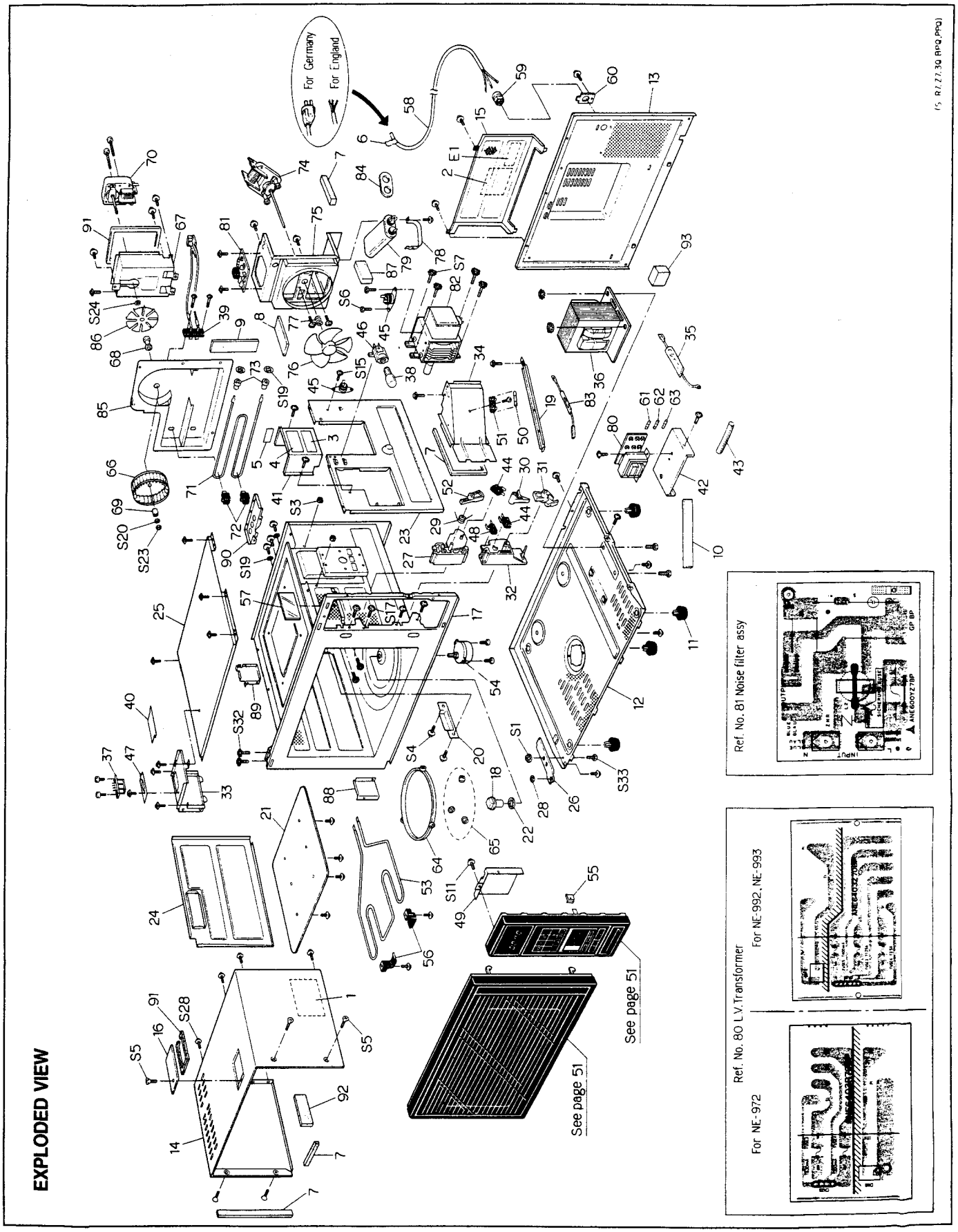
(2. Microwave & Grill Combination—Category 5, 6)

STEP	OPERATION	FUNCTION	DISPLAY
1	• Pour adequate water in a oven glassware or ceramic utensil and place the utensil on the white glass ceramic tray in the oven. • Tap Combination Pad 5 times.	• Clock time disappears. • Microwave power indicator light and Grill indicator light turn on. • Combination category number "5" appears in the display window.	
2	Set cooking time for 2 min.	• Category number "5" disappears and Combination Cooking time "2 00" appears in the display window. • Microwave power indicator light and Grill indicator light remain on.	
3	Tap Start Pad.	• Combination cooking begins. • Oven lamp turns on. • Turntable begins to rotate. • Combination cooking time starts counting down. • Microwave power indicator light and Grill indicator light start blinking.	
		• When combination cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • Oven lamp and indicator light turn off. • T.O.D. appears in display window.	

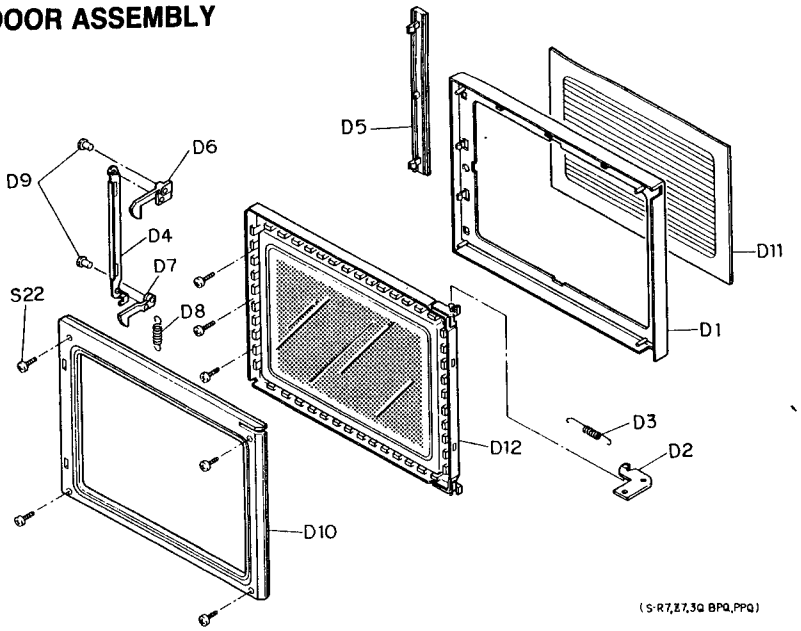
10. Auto Weight Combination ( )

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Combination Category Pad 5 times to select Cook Category 5.	• Clock time disappears. • Category number "5" appears in the display window. • Auto Weight Combination indicator light turns on. • kg or lb. oz indicator turns on.	
2	• Select the correct indicator between kg and lb. oz by tapping kg/lb convert pad. • Set the weight to 3 kg by tapping 1 kg pad three times.	• Category number disappears. • Selected weight "3.0" appears in the display window.	
3	Tap Start Pad.	• Auto Weight Combination Cooking begins. NOTE: **Refer to cooking pattern of "Microwave & Convection Combination/Fig. 6B" for Auto Weight Combination Cooking.** • Selected weight "3.0 kg" disappears and Combination Cooking time "1h 53" appears and starts counting down. • Auto Weight Combination Cooking indicator light begins blinking. • Oven lamp turns on. • Turntable begins to rotate.	
4	Tap Stop/Cancel Pad twice.	• Oven shuts off. • The display window will show TOD again.	

EXPLODED VIEW AND PARTS LIST

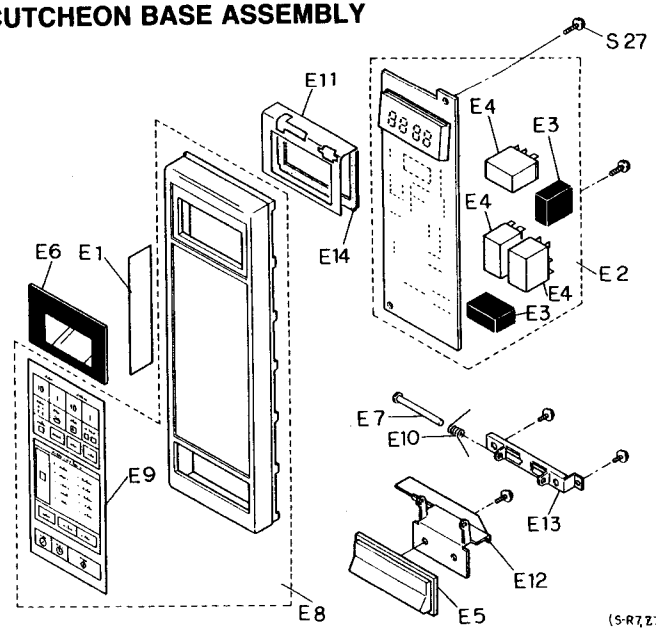


DOOR ASSEMBLY



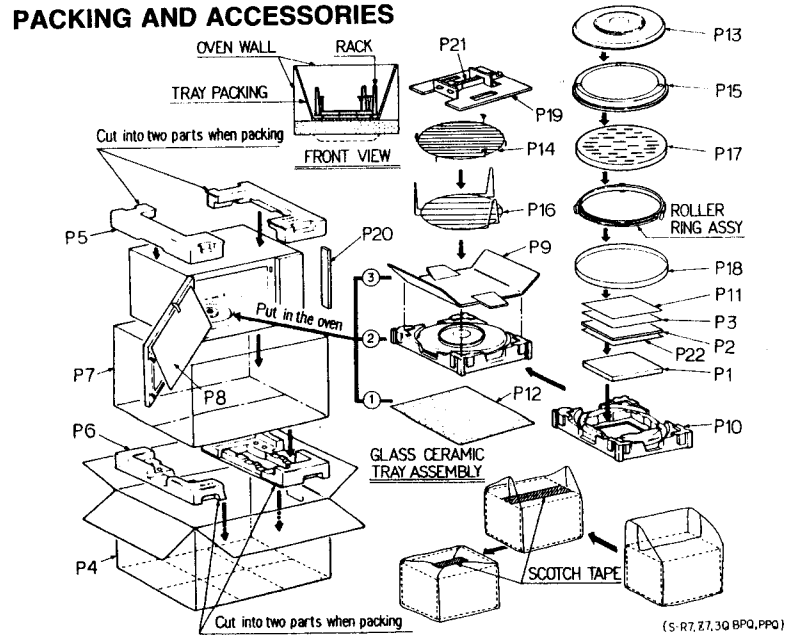
(S-R7,Z7,3Q BPQ,PPQ)

ESCUTCHEON BASE ASSEMBLY



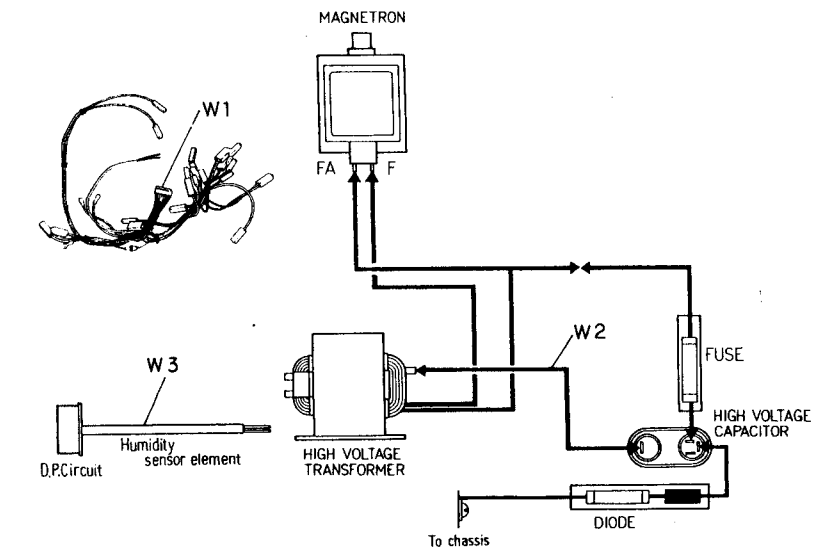
(S-R7,Z7,3Q BPQ,PPQ)

PACKING AND ACCESSORIES



(S-R7,Z7,3Q BPQ,PPQ)

WIRING MATERIAL



(S-R7,Z7,3Q BPQ,PPQ)

NUR ARGES + NAFT

PARTS LIST (NE-972, NE-992, NE-993)

NOTE 1: When ordering replacement part(s), please use part number(s) shown in this parts list. Do not use description of the part.
2: Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
1		ANE0001R70BP	Schematic diagram	1	For NE-972
		ANE0001Z70BP	Schematic diagram	1	For NE-992, NE-993
2		ANE0006Z70BP	Warning label	1	
3		ANE0033Z70BP	Fuse label	1	
4		ANE0056770XN	High voltage label	1	
5		ANE0072Z70BP	Oven lamp label	1	
6		ANE0239570BN	Cord label	1	
7		ANE000Z000AA	Cushion rubber	4	
8		ANE0925000AE	Cushion rubber C	1	
9		ANE0925000AM	Cushion rubber C	1	
10		ANE0927000AM	Cushion rubber C	1	
11		ANE100FZ70BP	Rubber foot	4	
12		ANE1001Z70BP	Base	1	
13		ANE1004Z70BP	Back panel	1	
14		ANE1009Z70BP	Outer panel	1	For NE-972, NE-992 (NOTE 3)
		ANE10093Q0BP	Outer panel	1	For NE-993 (NOTE 3)
15		ANE1058Z70BP	Back panel cover A	1	
16		ANE1060K50BN	Lamp cover	1	For NE-972, NE-992
		ANE1060Y80GS	Lamp cover	1	For NE-993
17		ANE200AZ70BP	Oven	1	
18		ANE200YX00AP	Pulley shaft	1	
19		ANE2036Z70BP	Reinforce bracket B	1	
20		ANE2055Z70BP	Cover A	1	
21		ANE2144Z70BP	Upper panel B	1	
22		ANE2177X00AP	Washer	1	
23		ANE2236Z70BP	Right heater panel	1	
24		ANE2237Z70BP	Left heater panel	1	
25		ANE2278Z70BP	Upper heater panel	1	
26		ANE3007Z70BP	Lower hinge	1	
27		ANE30202L0AP	Door hook A	1	
28		ANE3081B60AP	Door hinge spacer	1	
29		ANE30972L0AP	Spring	1	
30		ANE31362A0AP	Hook spacer A	1	
31		ANE31372A0AP	Hook spacer B	1	
32		ANE32672L0AP	Door hook B	1	
33		ANE400KZ70BP	Exhaust guide	1	
34		ANE4025Z70BP	Air guide A	1	
35	⚠	ANE600AZ70BP	Diode assy	1	(Si) (NOTE 4)
36	⚠	ANE620AZ70BP	H.V.Transformer	1	
37	⚠	ANE601L-F70	Sensor element	1	For NE-992, NE-993
38	⚠	ANE6030Q50GN	Oven lamp	1	(220/240V, 25W)
39		ANE605Y2L0AP	Oven temp sensor	1	With small P.C.B
40		ANE6070Z70BP	Insulation sheet A	1	For NE-992, NE-993
41		ANE6073Z70BP	Oven lamp cover	1	
42		ANE6106Z70BP	Parts bracket A	1	For NE-992, NE-993
43		ANE61392L0AP	Insulation tube	1	
44	⚠	ANE6142-F60	Switch	2	Safety switch A, B (V-15G-3C26)
45	⚠	ANE6145X00AP	Thermal cutout	2	
46	⚠	ANE603XQ80QN	Oven lamp socket	1	
47		ANE6156R70BP	Insulation panel A	1	For NE-972
		ANE6156Z70AP	Insulation panel A	1	For NE-992, NE-993
48	⚠	ANE6178-F80	Switch	1	Short switch (V-15-2C25)
49		ANE6219Z70BP	Insulation cover	1	
50	⚠	ANE6230Z70BP	Fuse	1	(8A)
51		ANE6231-F50	Fuse holder	1	
52		ANE62412L0AP	Lever	1	
53	⚠	ANE630HZ70BP	Grill heater	1	
54	⚠	ANE6326X70GP	Turntable motor	1	(4W)
55		ANE6408Z70BP	Washer	1	
56		ANE6418Z70BP	Heater support B	2	
57		ANE6437Z70BP	Glass plate	1	
58	⚠	ANE9024Z70BP	Power supply cord	1	For England
	⚠	ANE900CZ70GP	Power supply cord	1	For Germany
59	⚠	ANE9027570XN	Cord bushing	1	
60		ANE9035X70AP	Cord stopper	1	
61	⚠	XBA2C04TROKB	Fuse	1	For NE-992, NE-993 (400mA)
62	⚠	XBA2C06TROKB	Fuse	1	For NE-972 (630mA)
	⚠	XBA2C12TROKB	Fuse	1	For NE-992, NE-993 (1.25A)
63	⚠	XBA2C02TROKB	Fuse	1	For NE-972 (200mA)
	⚠	XBA2C25TROKB	Fuse	1	For NE-992, NE-993 (2.5A)
64		ANE290D2L0AP	Roller ring assy	1	
65		ANE202K2L0AP	Roller B assy	1	(NOTE 5)
66		ANE2239-Y30	Circulation fan	1	
67		ANE401RZ70BP	Bracket	1	
68		ANE4161Z70BP	Fan spacer A	1	
69		ANE4162-Y30	Fan spacer B	1	
70	⚠	ANE4179Z70BP	Convection motor	1	
71	⚠	ANE630GZ70BP	Convection heater	1	
72		ANE6417Z70BP	Heater support A	2	
73		ANE6501K90AP	Holder C	2	
74	⚠	ANE400AL90QN	Fan motor	1	
75		ANE400RZ70BP	Fan motor bracket B	1	
76		ANE4008X00AP	Fan	1	
77		ANE4057-F50	Spring	1	
78		ANE6037X00AP	Capacitor bracket	1	
79	⚠	ANE6090B00AP	H.V.Capacitor	1	(1.0μF, AC2100V)
80	⚠	ANE692MR70BP	L.V.Transformer assy	1	For NE-972
	⚠	ANE692MZ70BP	L.V.Transformer assy	1	For NE-992, NE-993
81	⚠	ANE692YZ70BP	Noise filter assy	1	
82	⚠	2M210-M1	Magnetron	1	
83		ANE606EZ70BP	Fuse	1	(0.5A)
84		ANE6239Z70BP	Insulation cap	1	
85		ANE203MZ70BP	Back heater panel	1	
86		ANE4159-Y30	Fan	1	
87		ANE0927000AE	Cushion rubber C	1	
88		ANE2094Z70BP	Reinforce bracket	1	
89		ANE2095Z70BP	Reinforce bracket	1	
90		ANE2098Z70BP	Reinforce bracket	1	
91		ANE000Z000AB	Cushion rubber C	2	
92		ANE0927000AP	Cushion rubber C	1	
93		ANE0919000DE	Cushion rubber B	1	

NOTE 3: Please order schematic diagram together.
4: This diode assy is supplied together with 500 mA fuse.
5: When ordering the roller B assy, each three rollers and washers will be shipped.
When replacing the roller B, each three rollers and washers should be replaced at the same time.
Otherwise the glass cook plate may not turn smoothly.

DOOR ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
D1		ANE3001Z70BP	Door A	1	For NE-972, NE-992
		ANE30013Q0BP	Door A	1	For NE-993
D2		ANE3006Z70BP	Upper hinge	1	
D3		ANE3009Z70BP	Door spring	1	
D4		ANE301HX00AP	Door key lever B	1	
D5		ANE3012Z70BP	Door handle	1	For NE-972, NE-992
		ANE30123Q0BP	Door handle	1	For NE-993
D6		ANE3018X00AP	Door key A	1	
D7		ANE3019X00AP	Door key B	1	
D8		ANE30212L0AP	Door key spring	1	
D9		ANE8056X00AP	Handle pin	2	
D10		ANE3085Z70BP	Door C	1	For NE-972, NE-992
		ANE30853Q0BP	Door C	1	For NE-993
D11		ANE3146Z70BP	Door screen B	1	For NE-972, NE-992
		ANE31463Q0BP	Door screen B	1	For NE-993
D12		ANE302KZ70BP	Door E assy	1	

PACKING AND ACCESSORIES

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
P1		ANE000BZ70BP	Cook book	1	
P2		ANE0003R70BP	Instruction book	1	For NE-972
		ANE0003Z70BP	Instruction book	1	For NE-992, NE-993
P3		ANE0013X70BP	Warranty card	1	
P4		ANE0102R70BP	Outer case	1	For NE-972
		ANE0102Z70BP	Outer case	1	For NE-992
		ANE01023Q0BP	Outer case	1	For NE-993
P5		ANE0104Z70BP	Upper filler	1	
P6		ANE0105Z70BP	Lower filler	1	
P7		ANE0106910AP	Vinyl cover	1	
P8		ANE0107580AP	Door sheet	1	
P9		ANE0108Z70BP	Tray packing	1	
P10		ANE0113Z70BP	Tray styrol	1	
P11		ANE0169Q50GN	Servicenter list	1	
P12		ANE0207-860	Styrol sheet	1	
P13		ANE0601Z70BP	Glass ceramic tray	1	
P14		ANE0602Z70BP	Rack	1	
P15		ANE0603Z70BP	Cookie sheet	1	
P16		ANE0641Z70BP	Rack B	1	
P17		ANE0648Z70BP	Spatter shield	1	
P18		ANE0709Z70BP	Cook sheet C	1	
P19		ANE0117Z70BP	Packing B	1	
P20		ANE0145Z70BP	Door sheet B	1	
P21		ANE0604-F20	Handle	1	
P22		ANE0420Z70BP	Setting guide	1	

ESCUTCHEON BASE ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
E1		ANE0007R70BP	Name plate	2	For NE-972
		ANE0007Z70BP	Name plate	2	For NE-992
		ANE00073Q0BP	Name plate	2	For NE-993
E2	⚠	ANE603LR70BP	D.P.Circuit assy	1	For NE-972 (W/Component)
	⚠	ANE603LZ70BP	D.P.Circuit assy	1	For NE-992, NE-993 (W/Component)
E3	⚠	AEAWAJY2946	Power relay	1	For NE-972 (JY1F)
	⚠	AEAWAJY2946	Power relay	2	For NE-992, NE-993 (JY1F)
E4	⚠	AEAWG4W1T18B	Power relay	3	
E5		ANE8072X80GP	Door opening button	1	For NE-972, NE-992
		ANE80722U0BP	Door opening button	1	For NE-993
E6		ANE8126R70BP	Smoke panel	1	For NE-972
		ANE8126Z70BP	Smoke panel	1	For NE-992
		ANE81263Q0BP	Smoke panel	1	For NE-993
E7		ANE8191X80AP	Cook lever shaft	1	
E8		ANE800LR70BP	Escutcheon base assy	1	For NE-972 With Membrane switch
		ANE800LZ70BP	Escutcheon base assy	1	For NE-992 With Membrane switch
		ANE800L3Q0BP	Escutcheon base assy	1	For NE-993 With Membrane switch
E9		ANE6479R70BP	Membrane switch	1	For NE-972
		ANE6479Z70BP	Membrane switch	1	For NE-992
		ANE64793Q0BP	Membrane switch	1	For NE-993
E10		ANE8194Q40AQ	Cook lever spring	1	
E11		ANE8249Z70BP	Metal shield	1	
E12		ANE8256Z70BP	Door opening lever	1	
E13		ANE8257Z70BP	Bracket	1	
E14		ANE8284Z70BP	Cushion rubber	1	

WIRING MATERIAL

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
W1		ANE030AR70BP	Lead wire harness	1	For NE-972
		ANE030AZ70BP	Lead wire harness	1	For NE-992, NE-993
W2		ANE0351Z70BP	Lead wire	1	
W3		ANE0353Z70BP	Shield cable	1	For NE-992, NE-993

STANDARD PARTS

Ref. No.		Part No.	Description	Size (mm)	Q'ty	Usage
S1		XNWANE5ES	Nut	M5	2	Lower hinge
					1	H.V.Transformer
S2		XNWANE5ES2	Nut	M5	2	H.V.Transformer
S3		XNW4ES	Nut	M4	2	Cover A
S4		XSB4+10FNSE	Screw	4X10	3	Grill heater
					2	Cover A
S5		XTC4+10BC	Screw	4X10	4	Outer panel
					1	Lamp cover
S6		XTEANE3+6B	Screw	3X6	2	Thermal cutout (For magneron)
S7		XTEANE5+10B	Screw	5X10	4	Magnetron
S8		XTNANE4+10B	Screw	4X10	1	Fuse holder
					2	Turntable motor
S9		XTNANE4+8B	Screw	4X8	3	Door handle
S10		XTWANE35+14B	Screw	3.5X14	2	Oven temp sensor
S11		XTWANE4+12B	Screw	4X12	6	Reinforce bracket
					2	L.V.Transformer
					2	Escutcheon base
					2	Back panel cover
					1	Cord stopper
					2	Fan motor bracket B
					1	Capacitor bracket
					1	Back panel
S12		XTWANE4+10BN	Screw	4X10	10	Back heater panel
S13		XTWANE4+12BN	Screw	4X12	5	Heater panel
					1	Exhaust guide
					1	Insulation panel
S14		XTWANE4+12B3	Screw	4X12	1	Base
S15		XTWANE4+6B	Screw	4X6	1	Thermal cutout (For oven)
					2	Oven lamp cover
S16		XTWANE4+8BN	Screw	4X8	1	Exhaust guide
					4	Circulation fan
S17		XTW4+12T	Screw	4X12	2	Door hook A
					2	Door hook B
S18		XTXANE4+25B	Screw	4X25	1	Heater panel
S19		XUBANE66FZ	CS ring		2	Convection heater
					2	Grill heater
S20		XWG4BV	Washer	M4	2	Heater support B
					1	Circulation fan
S21	⚠	XWNANE53GV	Washer		1	Power supply cord earth
S22		XTBANE4+12FK	Screw	4X12	4	Door C (For NE-972, NE-992)
		XTBANE4+12FC	Screw	4X12	4	Door C (For NE-993)
S23		XNG4EVSL	Nut	M4	1	Circulation fan
S24		XUEANE32KP	U ring		1	Fan
S25		XYN4+C20VS	Screw	4X20	2	Convection motor
S26		XTWANE4+8S	Screw	4X8	2	Fan motor
S27		XTW4+12Q	Screw	4X12	2	Bracket
					2	D.P.Circuit
S28		XYCANE4+E12C	Screw	4X12	4	Outer panel
					4	Base
S29		XYCANE4+C10	Screw	4X10	2	Noise filter
S30		XYD4+BC12XRK	Screw	4X10	2	Back heater panel
					4	Upper panel B
					2	Heater support
S31		XYD4+EE12F	Screw	4X12	1	Diode earth
					1	Power supply cord earth
					1	Washer
					1	Parts bracket (For NE-992, NE-993)
S32		XYEANE5+E12S	Screw	5X12	3	Upper hinge
S33		XYEANE5+C16T	Screw	5X16	2	Lower hinge
S34		XYF4ZAF6	Screw	4X6	1	Air guide A
					1	Reinforce bracket B
S35		XTW4+10Q	Screw	4X10	1	Door opening button
S36		XYT35+C8VS	Screw	3.5X8	2	Convection heater
					2	Grill heater
S37		XWA4BV	Washer	M4	1	Fan motor
S38		XYEANE5+C18T	Screw	5X18	2	H.V.Transformer

Ref.No.80 L.V.Transformer assy

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
CN1B		AEEMW-P1403	Connector	1	
CN2B		ANE0352R70BP	Lead wire	1	For NE-972
		ANE0354-Y00	Lead wire	1	For NE-992, NE-993
T1	⚠	ANE6249R70BP	L.V.Transformer	1	For NE-972 (ETP54J31E)
	⚠	ANE6249Z70BP	L.V.Transformer	1	For NE-992, NE-993 (ETP66P360E)
		ANE6231H60RN	Fuse holder	4	For NE-972
		ANE6231H60RN	Fuse holder	6	For NE-992, NE-993

Ref.No.81 Noise filter assy

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
C1	⚠	AECQVE105	Capacitor 1.0μF	1	(±20%, 250V)
C2, 3	⚠	ECQU2A333MF	Capacitor 0.033μF	2	(±20%, 250V)
R1		AERBKNY3W3R3	Surge resistor 3.3Ω	1	
S		ANE6489Z70BP	Surge absorber	1	
ZNR		ANE604QQ50GN	Varistor	1	
L1, 2		ANE621AZ70BP	Filter coil	1	